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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
STATEWIDE PLANNING BRANCH

# Craven County




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## 1992 THOROUGHFARE PLAN

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**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**  
**Statewide Planning Branch**

**Craven County**  
**Thoroughfare**  
**Plan**

**December, 1992**





**THOROUGHFARE PLAN**  
**for**  
**CRAVEN COUNTY, NORTH CAROLINA**

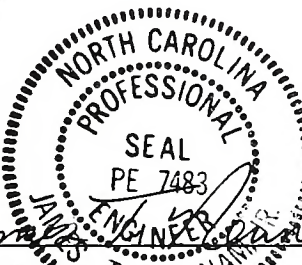
**Prepared by the:**

Statewide Planning Branch  
Division of Highways  
N. C. Department of Transportation

**In Cooperation with:**

The County of Craven  
The Federal Highway Administration  
U. S. Department of Transportation

December, 1992

  
*James T. Newman*  
JAMES T. NEWMAN P.E.  
THOROUGHFARE PLANNING ENGINEER



## ACKNOWLEDGEMENTS

### Persons Responsible for this Report:

Statewide Planning Branch Manager:  
Team Leader:  
Project Engineer:  
Associate Engineer:  
Project Technician:

Dr. M. R. Poole, P.E.  
J. T. Newnam, P.E.  
R. T. Blackwood  
E. D. McDonald, II  
A. A. Smith

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## I. INTRODUCTION

The economic growth of a region can be greatly influenced by how efficiently the transportation system handles travel demands. If the system fails to provide the means for quick and convenient transportation of people and goods, the region's economic growth becomes stagnated and fails to reach its full potential. It is necessary that such a system not only meet existing travel demands; but, that it also keep pace with the development of the region. This report will set forth a system of thoroughfares to serve the anticipated traffic and land development needs of Craven County for the next twenty six years. In the development of the system of thoroughfares, certain priorities shall be established based on maintenance needs, inadequate bridges, poor horizontal and vertical alignment, and insufficient present and future capacity.

The system of thoroughfares proposed was developed following the basic principles of thoroughfare planning as described in Chapter II of this report. Major thoroughfares were located based upon existing and anticipated travel demands, existing streets, existing and anticipated land developments, topographic conditions and field investigations. The plan advocates those improvements which are felt to be essential for proper traffic circulation within the current planning period (1989-2015).

Some of the proposed improvements in the County plan will be primarily the responsibility of the North Carolina Department of Transportation. However, Craven County can provide assistance in the implementation of the plan through subdivision regulations and zoning ordinances. With the different governmental agencies involved in developing the thoroughfare system, coordination of activities is of prime importance. Thus, it will be desirable for the plan to be formally adopted by both the County Commissioners and the North Carolina Board of Transportation to serve as a mutual official guide in providing a well coordinated, adequate, and economical major street system.





# GEOGRAPHICAL LOCATION MAP FOR

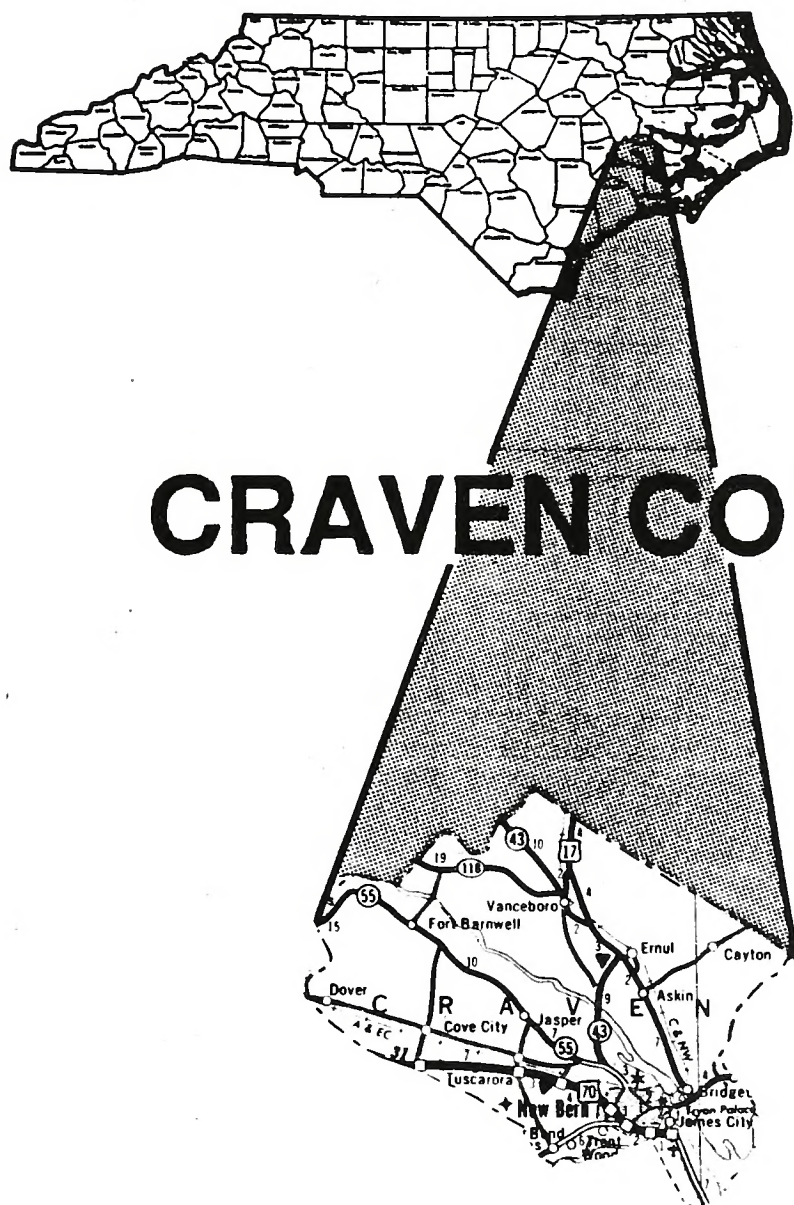


FIGURE 1



## II. COUNTY THOROUGHFARE PLANNING PRINCIPLES

### Purpose of Planning

There are many benefits to be gained from thoroughfare planning, but the primary objective is to assure that the road system will be progressively developed in a manner that will adequately serve future travel desires. Thus, the cardinal concept of thoroughfare planning is to make provisions for street and highway improvements so that when needs arise, feasible opportunities to make improvements exist.

Streets, roads, and highways perform two primary functions. They provide traffic service and land service. When combined, these two functions are basically incompatible. This conflict is not serious if both traffic and land service demands are low. When traffic volumes are high, however, access conflicts created by uncontrolled and intensely used abutting property result in intolerable traffic flow friction and congestion.

The major benefits derived from thoroughfare planning are:

- (1) Each road or highway can be designed to perform a specific function and to provide a specific level of service. This permits savings in right-of-way, construction, and maintenance costs; protects residential neighborhoods, and encourages stability in travel and land use patterns.
- (2) Local officials are informed of future improvements. Developers can design subdivisions to function in a non-conflicting manner. School and park officials can better locate their facilities. Damage to property values and community appearance that is sometimes associated with road improvements can be minimized.

### County Thoroughfare Planning Concept

The underlying concept of the thoroughfare plan is that it provides a functional system of streets, roads and highways which permit travel from origin to destinations with directness, ease, and safety. Different elements in the system are designed and called on to perform specific functions and levels of service, thus minimizing the traffic and land service conflict.

Within the County plan, elements are considered to be either urban or rural. In the urban planning area, the local municipality generally has planning jurisdiction. Outside the urban planning area, the County has planning jurisdiction. In those urban areas where no urban thoroughfare plan has been developed, elements are generally considered to be rural and under the planning jurisdiction of the County. When a thoroughfare plan is developed for an urban area that has not previously had a plan, then the area defined by that plan would be considered urban and come under the jurisdiction of the municipality.

Within the urban and rural systems, thoroughfare plan elements are classified according to the specific function which they are to perform. A discussion of the elements and functions of the two systems follows.

## Urban Thoroughfare Classification System

In the urban thoroughfare plan, elements are classified as either local access streets, minor thoroughfares or major thoroughfares. Local access streets which may be further classified as residential, commercial, or industrial streets are designed only to provide access to abutting property. Minor thoroughfares are more important streets in the urban system and are designed to collect traffic from local access streets and carry it to the major thoroughfare system. They may also serve abutting property and serve some minor through traffic movements. The major thoroughfares are the primary traffic arterials of the urban area providing for traffic movements within, around, and through the area.

Due to the limited amount of detail that can be shown on a county thoroughfare plan, only urban major thoroughfares are shown. A coordinated system of major thoroughfares which is most adaptable to desire lines of travel within an urban area and reflected in most urban area thoroughfare plans is the radial-loop system. The radial-loop system includes radials, crosstowns, loops, and bypasses. Radial thoroughfares provide for travel from points outside to major destinations inside the urban area. Crosstown thoroughfares provide for traffic movements across the central area and around the central business area (CBD). Loop thoroughfares provide for lateral travel movements between suburban areas. Bypasses are designed to carry non local traffic around or through the area. Occasionally a bypass with low traffic volumes can be designed to function as a portion of an urban loop. The radial-loop major thoroughfare system concept and concept of functionally classified urban street system are illustrated in Figure 2.

## Rural Thoroughfare Classification System

The rural system consists of those facilities outside the urban thoroughfare planning boundaries. They are classified into four major systems: principal arterials, minor arterials, major and minor collector roads, and local roads. Table 1 indicates generally accepted statewide mileage on these systems.



# IDEALIZED THOROUGHFARE PLAN

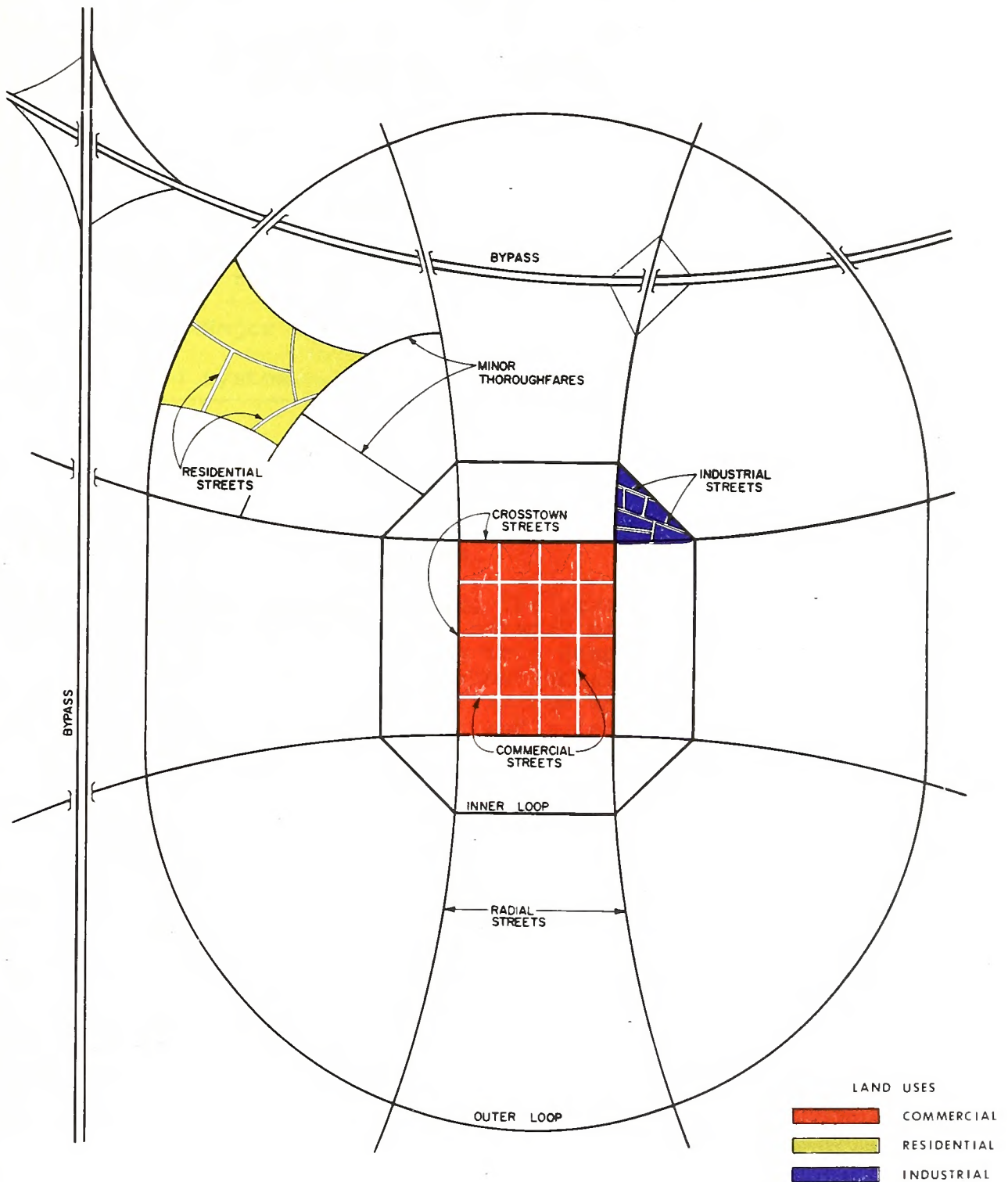


FIGURE 2





Table 1	
Rural System Road Mileage Distribution	
<u>System</u>	- <u>Percentage of Total Rural Miles</u>
Principal arterial system	2-4
Principal arterial system plus minor arterial road system	6-12
Collector (Major plus minor) road system	20-25
Local road system	65-75

Figure 3 gives a schematic illustration of a functionally classified rural highway system.

Rural Principal Arterial System: The rural principal arterial system consists of a connected network of continuous routes which serve corridor movements having trip length and travel density characteristics indicative of substantial statewide or interstate travel. The principal arterial system should serve all urban areas of over 50,000 population and a large majority of those with a population greater than 5000. The Interstate System constitutes a significant portion of the principal arterial system.

Rural Minor Arterial System: The minor arterial system in conjunction with the principal arterial system forms a network which links cities, larger towns, and other major traffic generators such as large resorts. The minor arterial system generally serves interstate and intercounty travel and serves travel corridors with trip lengths and travel densities somewhat less than the principal arterial system.

Rural Collector Road System: The rural collector routes generally serve intercounty travel rather than statewide travel and constitutes those routes on which the predominant travel distances are shorter than on the arterial routes. This system is subclassified into major collector roads and minor collector roads.

Major Collector Roads: These routes (1) provide service to the larger towns not directly served by the higher systems and to other traffic generators of equivalent intracounty importance, such as consolidated schools, shipping points,

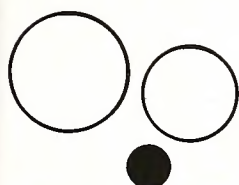
county parks, important mining and agricultural areas, etc., (2) link these places with nearby larger towns or cities, or with routes of higher classification; and (3) serve the more important intracounty travel corridors.

Minor Collector Roads: These routes (1) collect traffic from local roads and bring all developed areas within a reasonable distance of a collector road; (2) provide service to the remaining smaller communities; and (3) link the locally important traffic generators with their rural hinterland.

Rural Local Road System: The local roads comprise all roads not on one of the higher systems. Local residential subdivision streets and residential collector streets are elements of the local road system. Local residential streets are either cul-de-sacs, loop streets less than 2,500 feet in length, or streets less than one mile in length that do not connect thoroughfares or serve major traffic generators and do not collect traffic from more than one hundred dwelling units. Residential collector streets are streets which serve as the connecting street system between local residential streets and the thoroughfare system.

Figure 4 shows the functional classification of the major roads in Craven County.

# LEGEND



CITIES AND TOWNS

VILLAGE

PRINCIPAL ARTERIALS

MINOR ARTERIALS

MAJOR COLLECTORS

MINOR COLLECTORS

LOCALS

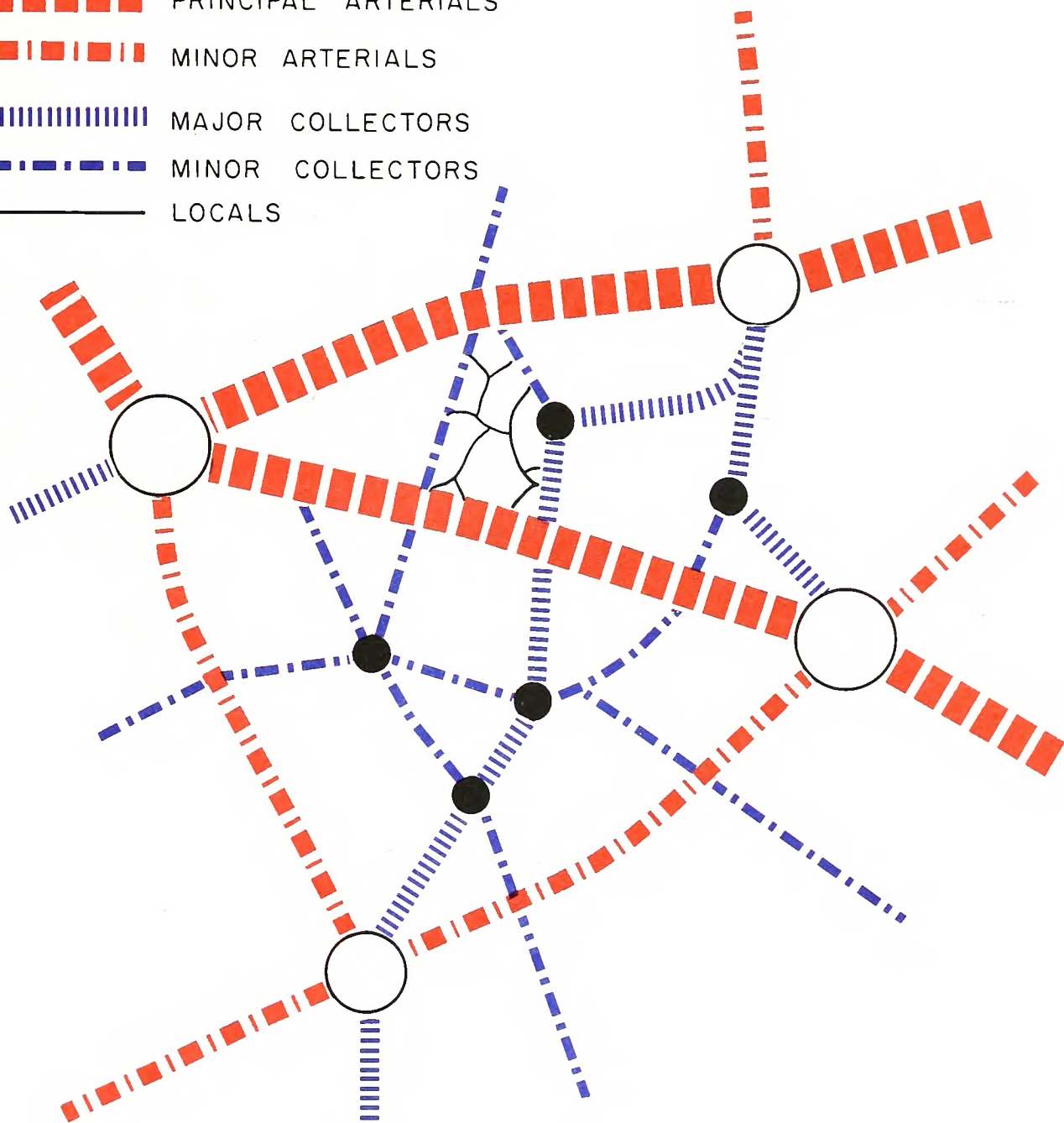
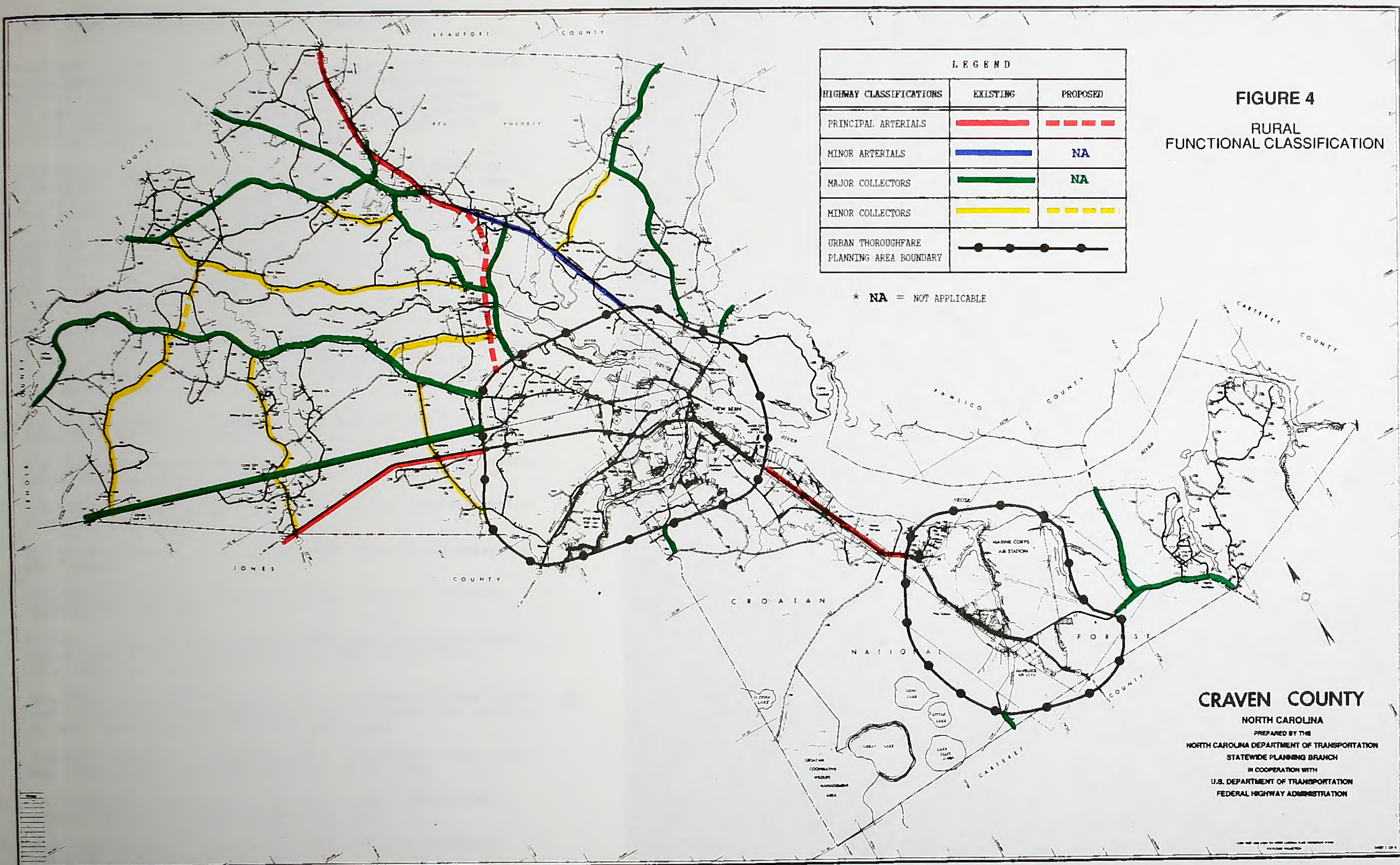


FIGURE 3

SCHEMATIC ILLUSTRATION  
OF FUNCTIONALLY CLASSIFIED  
RURAL HIGHWAY NETWORK







LEGEND		
HIGHWAY CLASSIFICATIONS	EXISTING	PROPOSED
PRINCIPAL ARTERIALS	<span style="color: red;">—————</span>	<span style="color: red;">- - - - -</span>
MINOR ARTERIALS	<span style="color: blue;">—————</span>	NA
MAJOR COLLECTORS	<span style="color: green;">—————</span>	NA
MINOR COLLECTORS	<span style="color: yellow;">—————</span>	<span style="color: yellow;">- - - - -</span>
URBAN THOROUGHFARE PLANNING AREA BOUNDARY	<span style="color: black;">● ——— ● ——— ● ——— ● ——— ●</span>	

\* NA = NOT APPLICABLE

**FIGURE 4**  
RURAL  
FUNCTIONAL CLASSIFICATION

**CRAVEN COUNTY**  
NORTH CAROLINA  
PREPARED BY THE  
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
STATEWIDE PLANNING BRANCH  
IN COOPERATION WITH  
U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION





### III. URBAN THOROUGHFARE PLANS IN CRAVEN COUNTY

Thoroughfare planning is the process used by public officials to assure the development of the most logical and appropriate street system to meet the existing and future travel desires within the urban area. It is essential that the municipalities and the County cooperate in developing a system for safe and efficient travel within, and beyond the County.

A Thoroughfare Plan was developed for the City of Havelock in 1979, and mutually adopted in 1982. A revision of that plan was underway at the time this report was being printed. A Thoroughfare Plan was also developed for the Cities of New Bern, Bridgeton, River Bend, and Trent Woods in 1989 and was later mutually adopted with the Department of Transportation in 1992. The Thoroughfare Plan Reports established priority listings for highway projects in the Havelock and New Bern planning areas. A priority list helps determine the construction schedules, which is published yearly by NCDOT as the Transportation Improvement Program (TIP). A priority list does not dictate that a certain project will be constructed before another, nor does it dictate a specific time for construction. It is simply a generalized rating of each project based on traffic at a specific point in time. This list should remain flexible and be updated regularly as traffic demands change in the future.

The major thoroughfare recommendations for the Havelock Planning Area through the year 2005 include:

1. Greenfield Boulevard Extension (a): a two lane extension of SR 1746 to SR 1756.
2. Greenfield Boulevard Extension (b): a two lane extension from SR 1756 to US 70.
3. Miller Boulevard: widen the existing two lane roadway to four lanes.
4. McCotter Boulevard: construct a new two lane facility from US 70 to NC 101.
5. NC 101: widen NC 101 to multi-lane urban sections, seven lanes from US 70 to Cunningham and four lanes from Cunningham to Geiger.
6. Secondary Road 1735 Extension (a): construct a new urban two lane curb & gutter section with allowance for parking on both sides from US 70 to Belltown Road.
7. Secondary Road 1735 Extension (b): construct a new rural two lane section from Belltown Rd. to SR 1756.
8. US 70 Bypass: construct a new four lane, controlled access facility around the Havelock area.
9. West Base Access: construct a new entrance to Cherry Point from US 70 west of Havelock.

The major thoroughfare recommendations for the New Bern Planning Area through the year 2015 include:

1. New John Lawson Bridge - Replace the present John Lawson Bridge with a multi-lane high rise bridge.
2. Williams Road/Brice's Creek Road Connector -construct a new two lane roadway to connect Williams Rd. to Brice's Creek Rd.
3. "K" Street Extension - construct a new two lane roadway from intersection of "K" St. and Main St. to the intersection of Neuse Blvd. and 1st St.
4. Bosch Boulevard - Extend Bosch Blvd. to US 17.
5. US 17 Bypass - Construct a proposed four lane freeway that will allow regional traffic on US 17 to bypass the local municipalities.
6. Clarks Road (SR 1225)/Saunders Lane (SR 1243) ) - Realign Clarks Rd. and Saunders Ln. to form a combined intersection at Old US 70.
7. Saunders Lane (SR 1243)/Ipock Road (SR 1243) - Realign Saunders Ln. and Ipock Rd. to form a combined intersection at NC 55.
8. Plantation Drive Extension - Extend Plantation Dr. to US 17.
9. Tar Landing Drive Extension - Extend Tar Landing Dr. from US 17 to the proposed Plantation Dr. extension.
10. Chelsea Road (SR 1200)/Dog Track Road (SR 1309) - Connect Chelsea Rd. to Dog Track Rd. with a two lane facility.

Appendix C contains a figure for the Havelock thoroughfare plan and a figure for the New Bern thoroughfare plan. It also contains a tabulation of the street systems and recommendations. A complete copy of the reports may be obtained from the Statewide Planning Branch of the North Carolina Department of Transportation.

Projects scheduled in the 1992 - 1998 Transportation Improvement Program for Havelock, New Bern and Craven County include:

1. US 17 -New Bern Bypass (R-2301)  
Four Lane Divided Freeway on New Location
2. US 17 -Widening to a Multi-lane Facility (R-2513)  
New Bern Bypass to Beaufort Co. Line
3. NC 55 -Upgrade Existing Roadway (R-2539)  
US 17 to NC 304 (Pamlico Co.)

4. US 70 -Havelock Bypass (R-1015)  
Divided Facility on New Location
5. US 17 -Upgrade Existing Roadway (U-2556)  
SR 1278 to US 70 BUS
6. US 70 -Corridor Improvements (W-2852)
7. SR 1100 -Install Automatic Warning Devices (Z-2517B)  
Atlantic & East Carolina Railway Crossing 722 681Y
8. SR 1225 -Install Automatic Warning Devices (Z-2717A)  
Atlantic & East Carolina Railway Crossing 722 714J
9. SR 1403 -Install Automatic Warning Devices (Z-2417A)  
Atlantic & East Carolina Railway Crossing 722 706S
10. SR 1737 -Install Automatic Warning Devices (Z-2717C)  
Atlantic & East Carolina Railway Crossing 722 604Y
11. SR 1628 -Install Automatic Warning Devices (Z-2817D)  
Southern Railway Crossing 466 084L
12. Havelock -Install Automatic Warning Devices (Z-2517A)  
Havelock Elementary School Access Road  
Atlantic & East Carolina Railway Crossing 722 677J
13. SR 1124 -Install Automatic Warning Devices (Z-2817E)  
Atlantic & East Carolina Railway Crossing 722 691E
14. Pollock ST. -Install Automatic Warning Devices (Z-2817A)  
Atlantic & East Carolina Railway Crossing 722 700B

A copy of this document can be obtained from the Program,  
Policy & Budget Branch of the North Carolina Department of  
Transportation.





#### IV. CRAVEN COUNTY-POPULATION, EMPLOYMENT, LAND USE, AND TRAFFIC

Craven County was originally formed in 1705 as the Archdale Precinct of Bath County. Later, in 1712, the name was changed to Craven County in honor of William Craven, Second Earl of Craven, and supporter of King Charles II. The County is located in the Central Coastal Region of North Carolina and is bordered by Beaufort, Pitt, Lenoir, Jones, Carteret, and Pamlico Counties (see figure 1). Government installations, retail trade, agricultural production, forestry and forestry products, and various manufacturing industries are the mainstay of Craven County's economy.

Craven County is crossed by two major US routes. US 70 is an east-west route which passes through Havelock and New Bern on it's way from the Piedmont Region to the Atlantic Ocean. US 17 is the only major north-south route in Craven County. It enters Craven County south of New Bern, travels north by northwest, and exits into Beaufort County after passing through Vanceboro. Other significant highways in Craven County are NC 43, NC 55, NC 101, NC 118, and NC 306. A small section of NC 41 is also located in Craven County where NC 41 terminates at US 70.

The County is also served by a major railroad, Norfolk Southern Corporation. Also of interest is the Camp Lejeune Railroad, a federally owned railroad connection between Cherry Point Marine Air Station and Camp Lejeune, North Carolina. No civilian transportation is served by these railroads.

Commercial air service for the County is presently provided by Craven County Regional Airport. This facility has seen steady growth since the mid-1980's. This trend is expected to continue due to the population growth and stimulated economy. Also located in Craven County is Cherry Point Marine Air Station. It is located northeast of Havelock and is the largest air station of the United States Marine Corps.

##### Factors Affecting Transportation

The objective of thoroughfare planning is to develop a transportation system which will enable people and goods to travel safely and economically. To determine the needs of a county; population, land use, and traffic must be examined. To properly plan for the transportation needs, it is important to understand and describe the type and amount of travel which takes place in that area, and also to clearly identify the goals and objectives to be met by the thoroughfare plan.

In order to fulfill the objectives of an adequate 26-year thoroughfare plan, reliable forecasts of future travel patterns must be achieved. Such forecasts are possible only when the following major items are carefully analyzed: (1) historic and potential population changes; (2) significant trends in the economy; (3) character and intensity of land development; and (4) motor vehicle registration and usage. Additional items that

vary in influence include the effects of legal controls such as zoning ordinances and subdivision regulations, availability of public utilities, transportation facilities, topographic and other physical features of the urban area.

### Population Trends

The volume of traffic on a section of roadway is a function of the size and location of the population it serves. An analysis of population is one of the first steps for transportation planning. The analysis of past trends allows the planner to estimate future population and the traffic that it will generate with some degree of reliability.

Since 1970, the population of Craven County has grown at an approximate rate of 1.19 percent per year (slightly greater than North Carolina's growth rate of 1.12 percent per year). This growth trend is due to the expansion of residential development, the increase in employment opportunities, and the rise in popularity of the region as a resort and retirement community. The next twenty years should see a continuation of this growth trend in Craven County.

Table 2 shows the historical and projected populations for North Carolina, Craven County, Havelock, and New Bern. Havelock and New Bern are the two largest municipalities in Craven County, comprising 46% of the County's population.

TABLE 2

POPULATION					
LOCATION	YEAR				
	1970	1980	1990	2000	2015
North Carolina	5,084,411	5,880,095	6,628,637	7,399,717	8,500,000
Craven County	62,554	71,043	81,613	94,440	113,000
Havelock	3,012	17,718	20,268	-	-
New Bern	14,660	14,557	17,363	-	-

Source: North Carolina Office of State Budget and Management

Table 3 shows the percent change in population for North Carolina, Craven County, Havelock, and New Bern.

**TABLE 3**

PERCENT CHANGE IN POPULATION				
LOCATION	1970-1980	1980-1990	1990-2000	2000-2015
North Carolina	+15.6	+12.7	+11.6	+14.9
Craven County	+13.6	+14.9	+15.7	+19.7
Havelock	+588.2*	+14.4	-	-
New Bern	-0.7	+19.3		

\* This dramatic increase due to the annexation of Cherry Point Marine Air Station

Source: North Carolina Office of State Budget and Management

#### EMPLOYMENT

The largest employment industry in Craven County is the government. Thirty-five percent of the labor force worked for the government in 1987. This large percentage is fueled by the presence of Cherry Point Marine Station and the Naval Air Re-work Facility. Other significant industry employment sectors are: construction, transportation, trade, finance, and service. These industries comprise a total of 80 percent of the industry employment in Craven County. This is contrary to the state trend toward a larger manufacturing sector. The employment sectors and their respective number of employees for 1987 are listed in Table 4.



TABLE 4

## EMPLOYMENT TRENDS IN CRAVEN COUNTY

Employment Classification	Number of Employees	Percent (%)
Agriculture	480	2.0
Manufacturing	4,190	14.0
Nonmanufacturing	25,490	84.0
Agricultural services, forestry, mining	150	.5
Construction	1,410	5.0
Transportation, commerce, and public utilities	1,180	4.0
Trade	6,830	23.0
Finance, insurance, and real estate	1,140	4.0
Services	4,300	14.0
Government	10,450	35

Source: North Carolina Department of Commerce, Employment Security Commission, 1987

Land Use

The generation of traffic on a particular street is very closely related to the utilization of adjacent land areas. Some type of land uses generate much more traffic than others. For example, a commercial or retail area such as a shopping center would generate or attract much larger volumes of traffic than a residential area. The attraction between different land uses varies with the intensity of the development and the distance between those developed areas. Therefore, it becomes necessary to designate land uses by type for the purposes of transportation planning. An analysis of the distribution of existing land uses serves as a basis for forecasting future land use needs and resulting travel patterns. Figure 5 shows the existing land uses for Craven County. Figure 6 shows the Transitional land uses for Craven County.



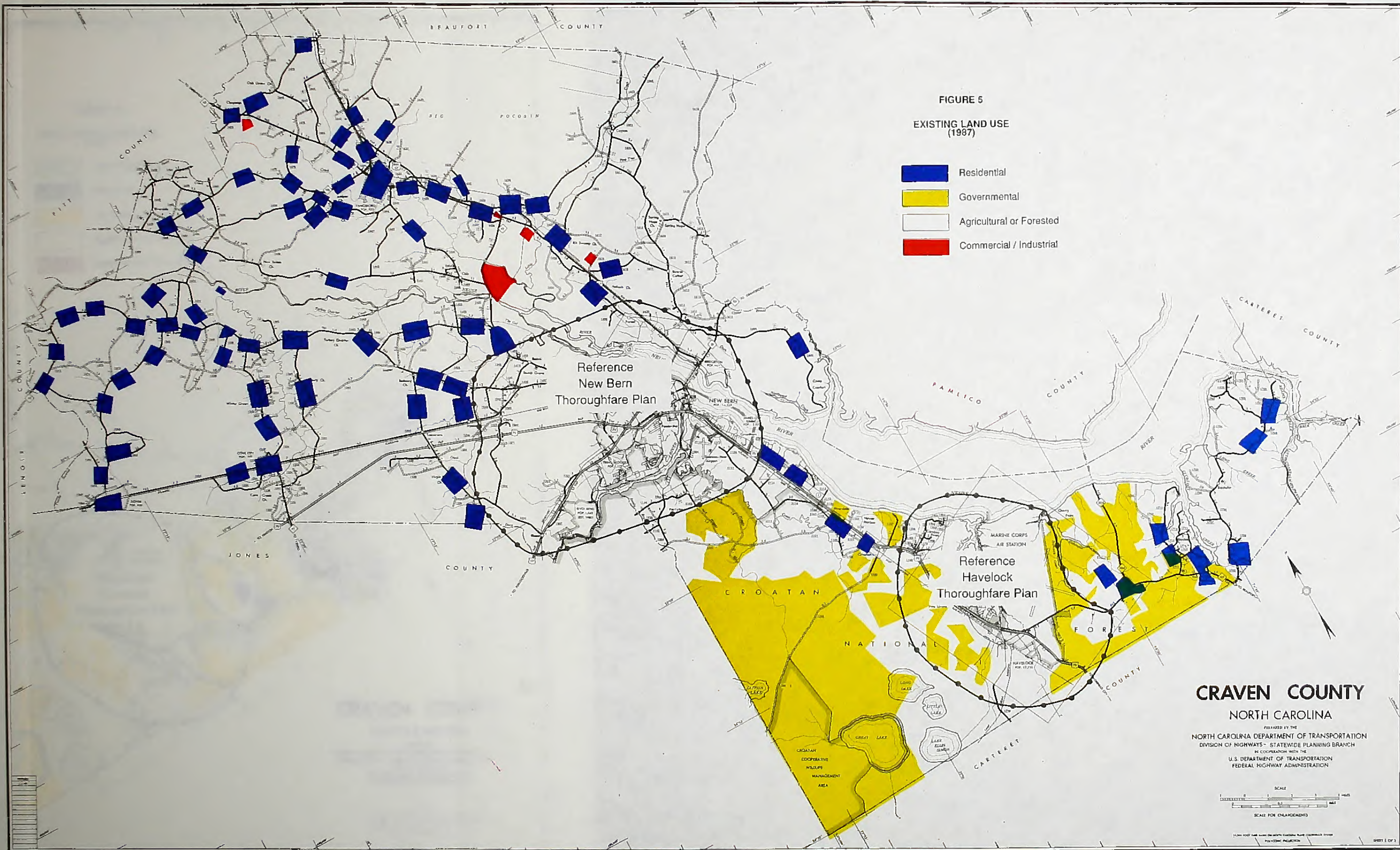


FIGURE 5

EXISTING LAND USE  
(1987)

- Residential
- Governmental
- Agricultural or Forested
- Commercial / Industrial

Reference  
New Bern  
Thoroughfare Plan

Reference  
Havelock  
Thoroughfare Plan

**CRAVEN COUNTY**  
NORTH CAROLINA

PREPARED BY THE  
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS - STATEWIDE PLANNING BRANCH  
IN COOPERATION WITH THE  
U.S. DEPARTMENT OF TRANSPORTATION  
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SCALE  
1 INCH = 1 MILE  
SCALE FOR ENLARGEMENTS

1:250,000  
POLYCONIC PROJECTION







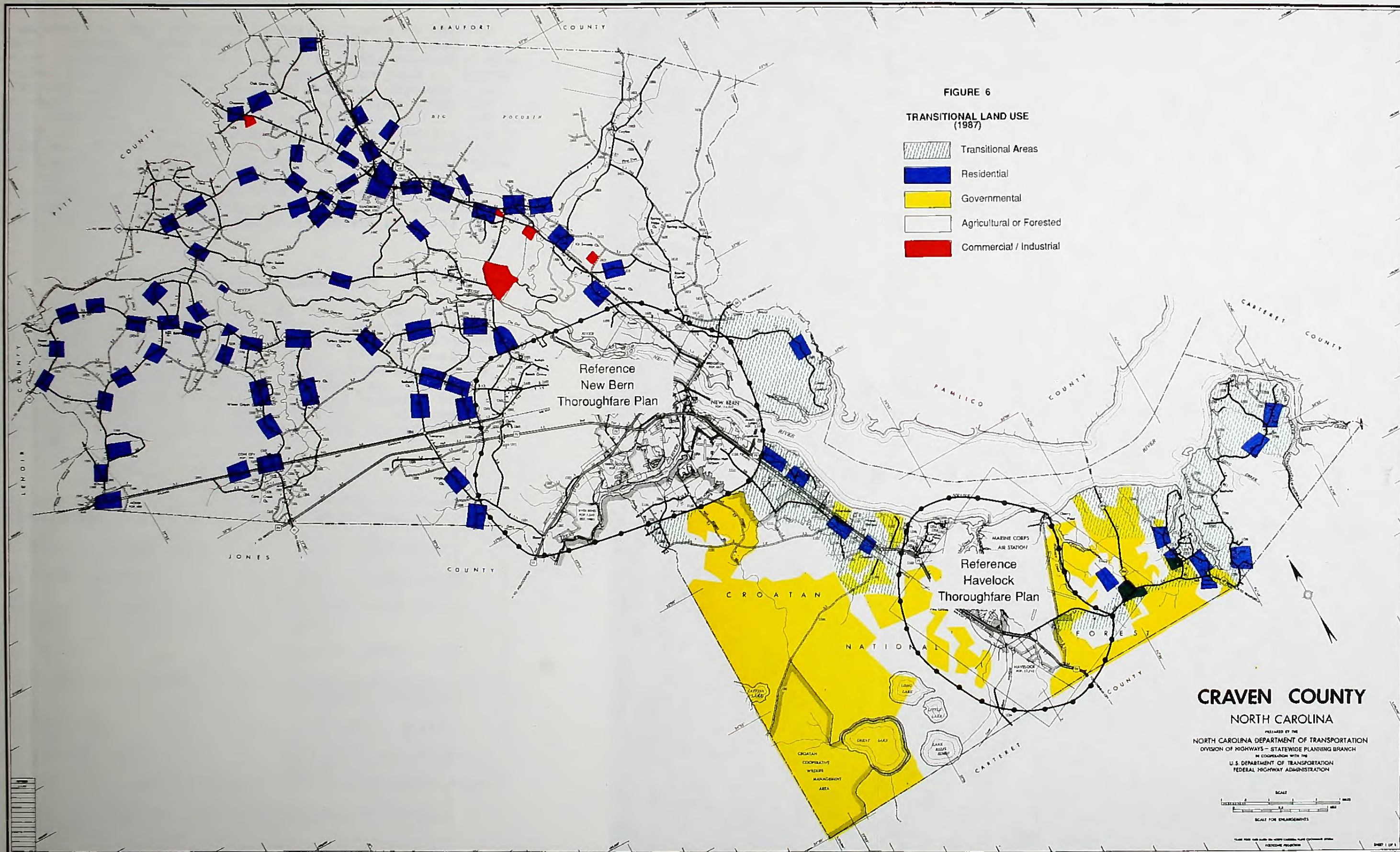


FIGURE 6  
TRANSITIONAL LAND USE  
(1987)

- Transitional Areas
- Residential
- Governmental
- Agricultural or Forested
- Commercial / Industrial

Reference  
New Bern  
Thoroughfare Plan

Reference  
Havelock  
Thoroughfare Plan

**CRAVEN COUNTY**  
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PLEASE REFER THIS MAP TO NORTH CAROLINA PLANS COMMISSION FOR  
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The majority of the land area in Craven County is covered with forests. However, there seems to be a slow, but steady, conversion of forestland into other uses. In 1982, harvested crop land accounted for approximately 18 percent of the land in Craven County. Primary crops include flue-cured tobacco, soybeans, and corn. Livestock production, mainly hogs, are another important area of farm land use. Also, a significant portion of the land in Craven County is covered by commercial forest land. Production in 1984 totaled over 46,478,000 board feet of pine and hardwood with four active sawmills. Industrial land use is mainly concentrated within the urban thoroughfare planning areas; except for the Weyerhaeuser paper mill, located at NC 43 and the Neuse river. These historical land use trends in Craven County are expected to remain relatively constant during the thoroughfare planning period.

### Historically Significant Land

There are over 200 or more sites of historic importance located throughout Craven County. Over 50 of these sites are within the planning areas of New Bern or Havelock and are covered in their respective urban thoroughfare plans. Of the remaining sites located in the County; one is on the National Register of historic places, and 13 are on the state study list. Table 5 lists these sites. The remaining sites are too numerous to list; however, their importance has not been overlooked. At present, no thoroughfare plan recommendations interfere with any of the above discussed sites.

**TABLE 5**

#### **Historically Significant Sites in Craven County**

* Clear Springs Plantation	James Biddle House
Alfred Chapman House	Church Chapman House
Clubfoot and Harlowe's Creek Canal	Croatan Presbyterian Church
Dudley House	James A. Ernul House
Gaskin's General Store	Tom Haywood Store and Self-kicking Machine
Taylor-Bell House	Isaac Taylor House
Abner Whitehead House	George M. Witherington House

\* Site listed in the National Register of Historic Places

## Traffic

A comparison of 1989 and projected 2015 average annual daily traffic volumes (ADT) on selected major roads and highways in Craven County are shown in Figure 7. The projected ADTs were based on historical and anticipated population, economic growth patterns and land use trends.

Vehicle registration has increased at a much greater rate than population since 1940. The increase can best be shown by a graph displaying the change in persons per vehicle ratio over a period of time. This ratio is obtained by dividing the total population of the area by the total number of vehicles registered in that area. Figure 8 shows this comparison for North Carolina and Craven County and includes projections to 2015. The results illustrate the transition from a non-automobile oriented society to one whose vitality is heavily dependent on the automobile. This change in life style has gradually occurred over many years, with the most dramatic difference between 1940 and 1960. This is primarily due to the following reasons:

- 1) The post-depression increase in the standard of living.
- 2) The increase in population including the post World War II "Baby Boom".
- 3) The transition from an agriculturally dominated society to a more diversified one (less people on the farm, but more need for transportation).
- 4) The availability of automobiles in the 1960's and 1970's and the banking credit to buy them (more cars easier credit).

Since the early 1970's however, these reasons for purchasing more automobiles have had less influence and have led to the expectation that the person per vehicle rate will begin to stabilize as projected in Figure 8. This saturation effect is expected to stabilize trip-making characteristics of families in the middle and upper income categories due to the fact they already have the financial means to purchase a sufficient number of vehicles to satisfactorily serve their transportation needs. On the other hand, moderate growth in the trip making characteristics of lower income families is projected due to an expected improvement in their financial well-being.



FIGURE 7



1989	0000
2015	0000

CRAVEN COUNTY

## NORTH CAROLINA

PREPARED BY THE  
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

STATEWIDE PLANNING BRANCH

IN COOPERATION WITH  
U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION





# CRAVEN COUNTY vs. NORTH CAROLINA PERSONS PER VEHICLE

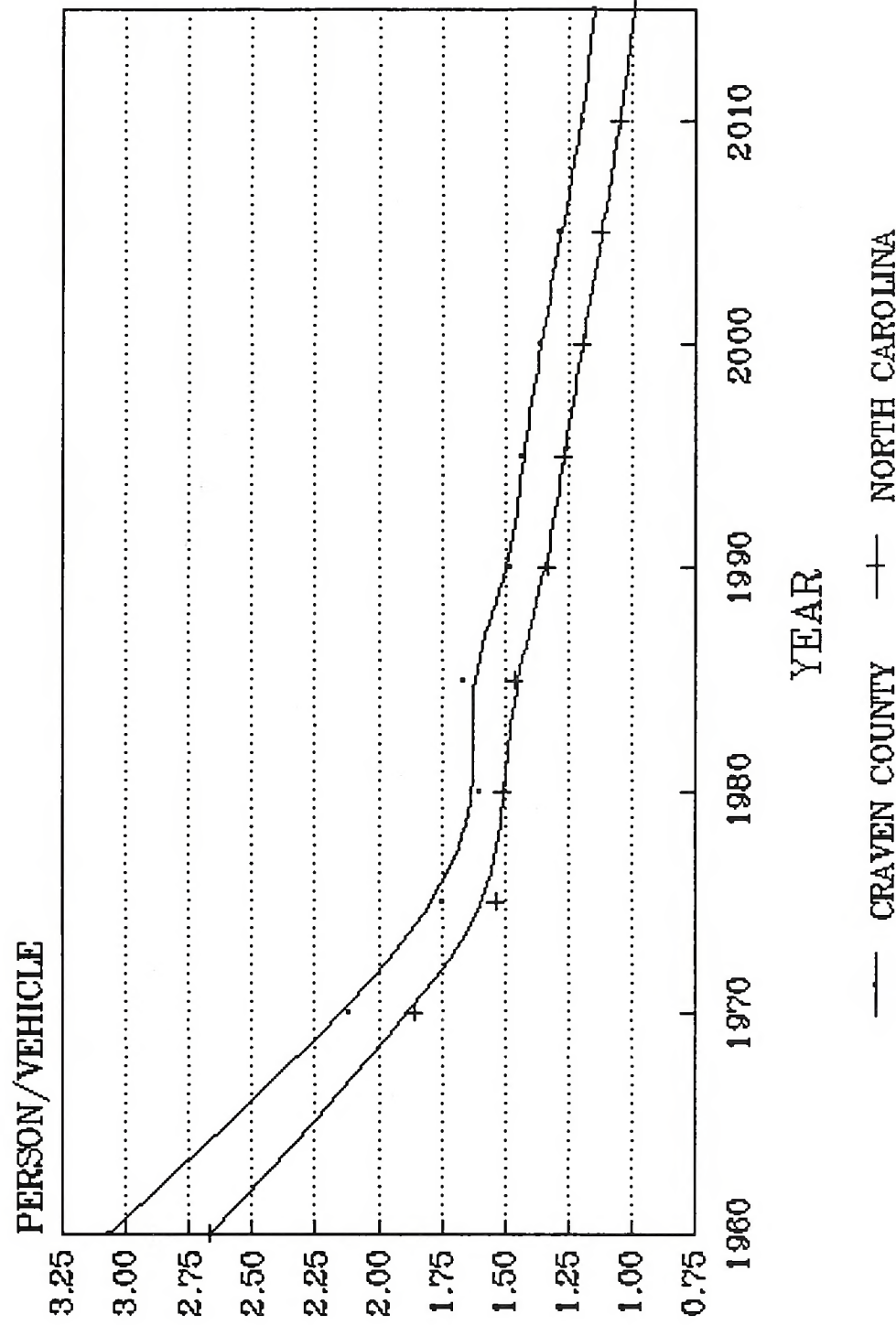


FIGURE 8





### Capacity, Width, and Alignment Deficiencies

North Carolina's standard for highway construction calls for 11 foot lanes on all highways with traffic volumes greater than 2000 ADT (average daily traffic) or design speeds greater than 50 miles per hour, including all primary arterials. A minimum lane width of 9 feet can be tolerated on collector roads with an ADT of less than 400 vehicles per day. Minimum level of service for minor collector roads dictate a 40 mph average overall travel speed during peak traffic conditions.

Design requirements for thoroughfares vary according to the desired capacity and level of services to be provided. Universal standards in the design of thoroughfares are not practical. Each road or highway section must be individually analyzed and its design requirements determined on the basis of amount and type of projected traffic, existing capacity, desired level of service, and available right-of-way.

The level of service is a function of the ease of movement experienced by motorists using the facility. The ability of a motorist to drive at a desired speed is dependent upon the physical design of the road, the amount and character of traffic control devices, the influence and character of traffic generated by abutting property, and imposed speed restrictions. The level of service is generally indicated by the overall travel speed experienced by traffic. Recommended minimum levels of service for roads and highways included in the proposed Craven County Thoroughfare Plan are given in Table 6.

**TABLE 6**

Minimum Levels of Service For Roads and Highways	
<u>Facility</u>	<u>Overall Travel Speed During Peak Traffic Conditions</u>
Major and Minor Arterials	50-55 MPH
Major Collector Roads	45-50 MPH
Minor Collector Roads	40 MPH

From the standpoint of driver convenience, ease of operations, and safety, it would be desirable to widen all existing roads and highways to provide a minimum lane width of 12 feet. However when considering overall statewide needs and available highway revenues, it is found that these levels of improvement applied statewide would be impractical. It is necessary, therefore, to establish minimum tolerable widths for existing roads with respect to traffic demands which would be economically feasible. Table 7 gives the widths used in determining the existing lane deficiencies in the County.

TABLE 7

Minimum Tolerable Lane Widths (in feet)			
<u>ADT</u>	<u>Principal Arterials</u>	<u>Minor Arterials</u>	<u>Collectors</u>
Over 2000	11	11	11
400-2000	-	10	10
100- 400	-	10	9
Below 100	-	-	9

An analysis of highways in Craven County was made to determine if the projected traffic (year 2015) would exceed the practical capacity of the system. The projected facility deficiencies are shown in Figure 11.

Comparing the projected traffic to available capacities, it is anticipated that the following roads will be experiencing capacity related problems within the design period:

- \* 1. US 17
- 2. US 70
- \* 3. NC 55
- 3. NC 101
- 4. Streets Ferry Rd. (SR 1440)
- 5. Lake Rd. (SR 1756)

\* Included in current Transportation Improvement Program

There are a number of roads in the County that have substandard widths. Standards established in Table 7 were used in the analysis. The width needed to bring these roads up to standard are given as the recommended cross section. Because of the substantial cost of upgrading all secondary roads to standard; narrow widths may have to be tolerated until sufficient funds are available to provide for improvements.

### Traffic Safety

Records of traffic accidents are of assistance in locating problem areas on the highway system. The 1991 safety program listing, obtained from the Traffic Engineering Branch of North Carolina Department of Transportation, is a tabulation of accident locations throughout the state.

Traffic accident data for the period from January, 1989 through June, 1991 was analyzed as part of the development of the thoroughfare plan. Listed in Table 8 are the locations with 10 or more accidents within 200 feet of the intersection.

Certain prevailing conditions were considered in the accident analysis. These conditions are: intersection geometrics, sight distance, signalization, road conditions, weather, light conditions, driver's condition and accident type. While no accidents are desired, a certain number are apparently unavoidable due to certain conditions.

TABLE 8

**CRAVEN COUNTY  
HIGH ACCIDENT LOCATIONS**

PRIORITY NUMBER	ACCIDENT LOCATION	SEVERITY INDEX	TOTAL NUMBER OF ACCIDENTS
3	NC43 & SR 1400	11.91	20
8 *	US17 & US17B	53.42	13
11	US17 & NC43	15.33	12
16	SR 1440 & SR 1444	27.74	10

\* - INDICATES A FATALITY

An inspection of these intersections resulted in the following recommendations:

**NC 43 (Weyerhaeuser Rd.) and SR 1400 (River Rd.)**

This signalized intersection is located at the entrance to the Weyerhaeuser paper mill. The majority of accidents are rear end collisions. Generally, a higher number of rear end type accidents are expected at a signalized location due to the frequent number of stops required. The geometry of this intersection may also contribute to the number of accidents at this location. River Rd. rounds a sharp curve just before the intersection with NC 43. It is recommended that the intersection be re-aligned to remove this curve. This could possibly be done during the construction of the US 17 Bypass which will pass near this intersection. In the meantime, consideration should be given to adding a flashing beacon to the signal ahead warning sign; and reducing the speed to 35 mph prior to the curve.

**US 17 and US 17 Business**

This intersection has a high number of angle accidents, one resulting in a fatality. The intersection is presently included in the 1992-1998 Transportation Improvement Program as part of the US 17 widening. It will be looked at closer during the design stage in order to correct the problem.

**US 17 and NC 43**

This intersection has a high number of angle accidents. This is due to the large volume of traffic presently using US 17 and NC 43. It is anticipated that the new US 17 Bypass will remove a significant amount of this traffic; thus, reducing the number of accidents at this location.

**SR 1440 (Streets Ferry Rd.) and SR 1444 (Piney Neck Rd.)**

This intersection is stop sign controlled on Piney Neck Rd. Piney Neck Rd. intersects Streets Ferry Rd. in a sharp right hand curve with a large embankment located on the right. The majority of the accidents are "run off the road" type



accidents. The remainder are angle and rear end type accidents. Chevron directional panels have been added to outline the curve for the driver in order to prevent the run off the road type accidents. In addition it is recommended that raised pavement reflectors be added through this section to further outline the curve at night. To solve the angle and rear end accidents the embankment to the right of the curve should be removed to improve sight distance through the area. If traffic volumes on this road continue to increase as predicted, future consideration should be given to re-alignment of Streets Ferry Rd. to reduce the severity of the curve.

### Bridge Conditions

Bridges are a vital and unique element of a highway system. First they represent the highest unit investment of all elements on the system. Second, any inadequacy or deficiency in a bridge reduces the value of the total investment. Third, a bridge presents the greatest opportunity of all potential highway failures for disruption of community welfare. Finally, and most importantly, a bridge represents the greatest opportunity of all highway failures for loss of life. For these reasons, it is imperative that bridges be constructed to the same design standards as the highway system of which they are a part.

Congress enacted the National Bridge Inspection Program Standards on April 27, 1971, implementing the Federal Highway Act of 1968. These standards require that "all structures defined as bridges located on and of the Federal-Aid Highway Systems be inspected and the safe load carrying capacity computed at regular intervals, not to exceed two years." A sufficiency index number has been calculated for each bridge for the purpose of establishing eligibility and priority for replacement. The bridges with the highest priority are replaced as Federal-Aid funds and State funds are made available. Additional funds have recently been provided by Congress specifically for bridge replacement.

The North Carolina DOT's Bridge Maintenance Unit has been assisted by consultants in inspecting all bridges on the State Highway System. All bridges in Craven County have been analyzed, rated, appraised, and inventoried. The resulting data has been reduced to a more readily useable form as a management tool.

A sufficiency rating is used in the analysis to determine the deficiency of a particular bridge. The sufficiency rating is a method of evaluating factors which determines the bridge's adequacy. Factors included: structural integrity, serviceability, functional obsolescence, public use, structure type, and traffic safety features. The result of this method is a percentage in which 100 percent would represent a new bridge and zero percent would represent a completely insufficient or deficient bridge. A sufficiency rating of 50 percent or less qualifies for Federal Bridge Replacement funds.

Twenty-six (26) bridges in Craven County have sufficiency

ratings of 50 percent or less, which makes them eligible for federal bridge replacement funds. Five of these bridges are located in the New Bern or Havelock planning areas and; therefore, they are covered in their respective urban thoroughfare plans. The remaining bridges are classified as structurally deficient or functionally obsolete. Table 9 lists structurally deficient bridges and Table 10 lists functionally obsolete bridges with sufficiency ratings less than 50 percent. The locations of these bridges are shown in Figure 9.

**TABLE 9**

Structurally Deficient Bridges in Craven County			
<u>Map Index</u>	<u>Sufficiency Rating %</u>	<u>Bridge No.</u>	<u>Location</u>
1	15.2	141	SR 1470 @ Neuse River Overflow
2	20.4	31	SR 1478 @ Swift Creek
3	20.7	81	SR 1431 @ Creek
4	22.8	137	SR 1236 @ Stream
5	31.6	55	SR 1264 @ Tracy Swamp
6	33.2	187	SR 1420 @ Caswell Branch
7	36.1	66	SR 1232 @ Creek
8 *	37.8	38	NC 118 @ Swift Creek
9	38.8	212	SR 1005 @ Bachelor Creek
10	41.4	103	SR 1001 @ Core Creek
11	41.6	16	SR 1623 @ Swift Creek
12 *	42.4	211	SR 1005 @ Cove Creek
13	45.3	26	SR 1621 @ Beaver Dam Swamp
14	46.4	29	SR 1641 @ Palmetto Swamp
15	47.4	74	SR 1615 @ Branch Upper Broad Ck
16	49.8	58	SR 1258 @ Branch Core Creek

\* Included in current Transportation Improvement Program

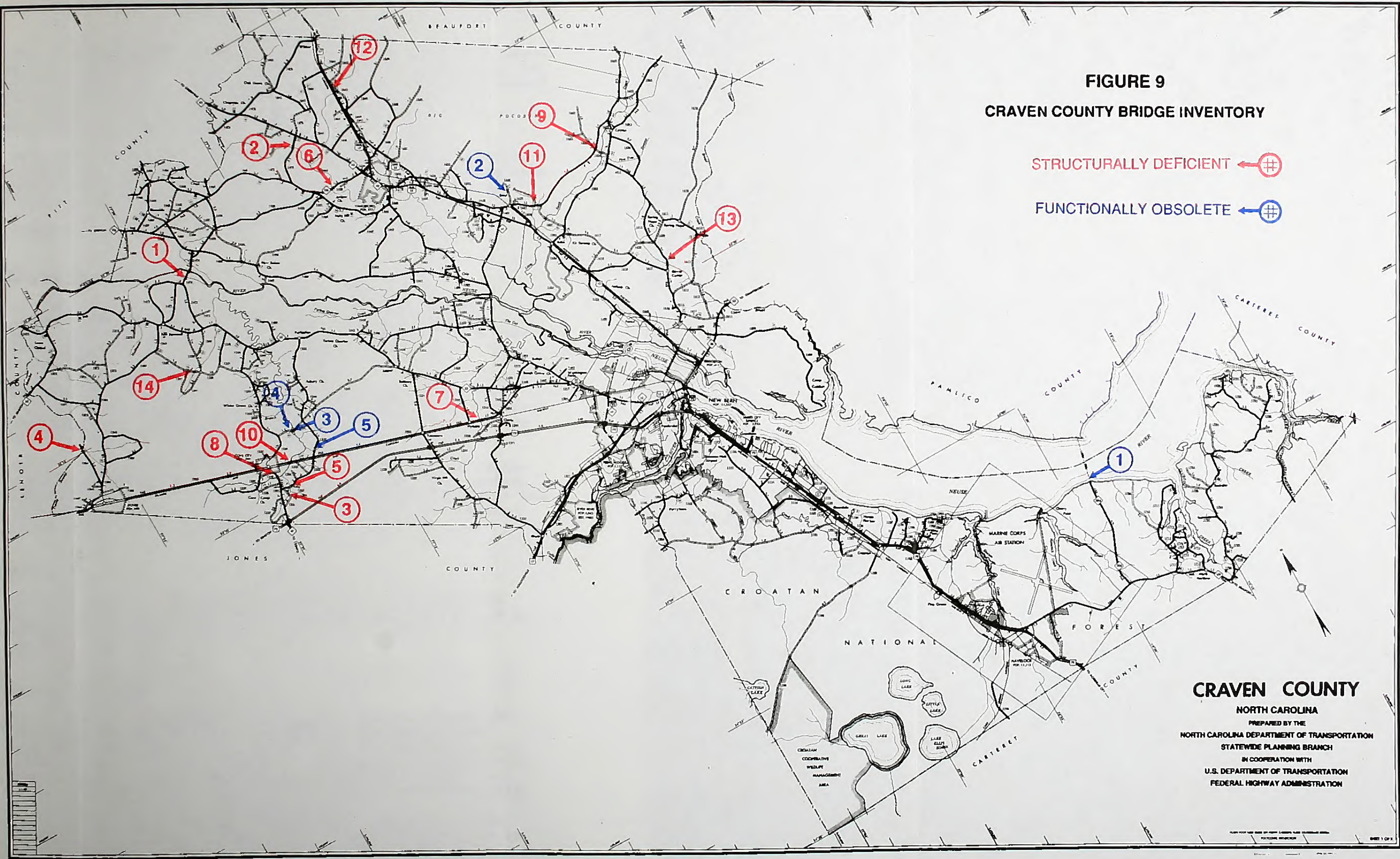
**TABLE 10**

Functionally Obsolete Bridges in Craven County			
<u>Map Index</u>	<u>Sufficiency Rating %</u>	<u>Bridge No.</u>	<u>Location</u>
1 *	28.9	214	NC 306 @ Neuse River
2	37.7	27	SR 1630 @ Beaver Dam Swamp
3	48.3	130	SR 1245 @ Branch of Core Creek
4	49.8	129	SR 1245 @ Core Creek
5	49.9	68	SR 1232 @ Branch of Core Creek

\* Included in current Transportation Improvement Program











## V. THOROUGHFARE PLAN

The recommended thoroughfare plan for Craven County is shown in Figure 10 and detailed in Appendix A, Table 1. Elements of the plan are initially classified as urban or rural. The areas around Havelock and New Bern are delineated as urban thoroughfare planning areas. Mutually approved thoroughfare plans exist between NCDOT and these municipalities.

Only major thoroughfares, classified as to either existing or proposed, are shown within the urban thoroughfare planning area in Figure 10. This is necessary due to the limited amount of detail that can be shown on the county level.

Elements of the Craven County Plan are as follows:

### Principal Arterials

1. US 17 - From Proposed US 17 Bypass to Beaufort County is projected to exceed capacity and is in the current Transportation Improvement Program to be widened to a four lane divided facility. Right of way acquisition is scheduled for FY1998.
2. Proposed US 17 Bypass - From New Bern Planning Area to US 17. This project is listed in the current Transportation Improvement Program as a four lane divided facility on new location, and is scheduled for construction in FY1996.
3. US 70 - From Jones County to New Bern Planning Area is not anticipated to exceed capacity during the planning period. From SR 1922 to SR 1106 is projected to be over capacity and should be widened to a six lane divided facility (Typical cross section N in Appendix A).

### Minor Arterials

1. US 17 - From the New Bern Planning Area to the proposed US 17 Bypass is projected to exceed capacity and should be widened to a four lane divided facility (Typical cross section B in Appendix A).

### Major Collector Roads

1. US 17 Bypass (Vanceboro) - This facility will exceed the capacity of its present two lane cross section by the planning year (2015). However, there is adequate roadway width to provide for a four lane cross section by removing the on street parking and remarking the pavement in this area. Therefore, this is the recommended course of action.
2. NC 41 - This facility has a very small length in Craven County (0.10 miles). The majority of the roadway lies in and serves Jones County. Therefore, the recommendations for

this facility will be developed with the Jones County thoroughfare plan.

3. NC 43 - From Pitt County to NC 118 is projected to meet or exceed capacity. Widening to 24 feet, typical cross section L, is recommended. The remainder of NC 43 from US 17 to the New Bern Planning Area will not exceed capacity during the planning period. (See Appendix A)
4. NC 55 - From Lenoir County to New Bern Planning Area will not exceed capacity during the planning period. From New Bern Planning Area to Pamlico County is projected to exceed capacity and is included in the current Transportation Improvement Program for widening to a four lane divided facility in FY1998.
5. NC 101 - From Havelock Planning Area to Carteret County is projected to exceed capacity during the planning period. Typical cross section G is recommended for the section from Havelock Planning Area to NC 306. The remainder of NC 101 from NC 306 to Carteret County is recommended to be typical cross section B except for a 2 mile section centered about Harlowe which is recommended to be typical cross section G. (See Appendix A.)
6. NC 118 - From Pitt County to NC 43 is not projected to exceed capacity during the planning period. However, the section from SR 1458 to NC 43 should be widened to a minimum width of 22 feet to improve functional design and enhance safety.
7. NC 306 - From NC 101 to the Cherry Branch Ferry Landing at the Neuse river is not projected to exceed capacity within the planning period.
8. SR 1003 (Aurora Rd.) - From Beaufort County to SR 1611 should be widened to a minimum width of 22 feet to improve functional design and enhance safety.
9. SR 1004 (Williams Rd.) - From Jones County to SR 1920 will not exceed capacity during the planning period. However, the section from SR 1101 to SR 1920 should be widened to a minimum width of 20 feet to improve functional design and enhance safety.
10. SR 1005 (Old US 70) - From Jones County to New Bern Planning Area will not exceed capacity during the planning period.
11. SR 1400 (River Rd.) - From SR 1440 to NC 43 will approach capacity by the design year (2015). Widening the facility to 24 feet, typical cross section L, is recommended. (See Appendix A)
12. SR 1440 (Streets Ferry RD.) - From NC 43 to SR 1400 will exceed capacity in the planning period. The section from NC 43 to SR 1444 should be widened to typical cross section H. The section from SR 1444 to SR 1400 should be widened to typical cross section L. (See Appendix A)



13. SR 1611 (ST. Delights Church Rd.) - From SR 1003 to SR 1615 should be widened to a minimum width of 20 feet to improve functional design and enhance safety.
14. SR 1615 (ST. Delights Church Rd.) - From SR 1611 to New Bern Planning Area should be widened to a minimum of 22 feet to improve functional design and enhance safety.
15. SR 1654 (Baily Ln.) - From NC 43 to US 17 Business should be widened to a minimum of 22 feet to improve functional design and enhance safety.
16. SR 1756 (Lake Rd.) - From Havelock Planning Area to Carteret County will approach capacity by the design year (2015) and should be widened to 24 feet, typical cross section L. (See Appendix A)

#### Minor Collector Roads

1. SR 1001 (Trenton Rd.) - From US 70 to SR 1005 should be widened to a minimum of 22 feet to improve functional design and enhance safety.
2. SR 1003 (Aurora Rd.) - From SR 1611 to US 17 should be widened to a minimum of 22 feet to improve functional design and enhance safety.
3. SR 1224 (Tuscarora Rd.) - From New Bern Planning Area to US 70 should be widened to a minimum of 22 feet to improve functional design and enhance safety.
4. SR 1256 (Wintergreen Rd.) - From NC 55 to SR 1245 should be widened to a minimum of 20 feet for safety reasons; and, from SR 1245 to Avery St. should be widened to a minimum of 22 feet to improve functional design and enhance safety. The final section from Avery St. to SR 1005 will be adequate for the duration of the planning period.
5. SR 1262 (Dover-Barnwell Rd.) - From SR 1005 to NC 55. The section from approximately 200 feet north of SR 1005 to NC 55 should be widened to a minimum of 22 feet to improve functional design and enhance safety.
6. SR 1400 (River Rd.) - From NC 118 to SR 1440 should be widened to a minimum of 22 feet to improve functional design and enhance safety.
7. SR 1401 (Spring Garden Rd.) - From NC 55 to SR 1424 should be widened to a minimum of 20 feet for safety reasons; and, from SR 1424 to NC 43 should be widened to a minimum of 22 feet to improve functional design and enhance safety.
8. SR 1444 (Piney Neck Rd.) - From NC 118 to SR 1440 should be widened to a minimum of 22 feet to improve functional design and enhance safety.



9. SR 1470 (Maple Cypress Rd.) - From SR 1472 to SR 1400 should be widened to a minimum of 20 feet to improve functional design and enhance safety.
10. SR 1471 (Belltown Rd.) - From NC 55 to SR 1472. It is recommended that this road be re-aligned so that it will line up with SR 1470. This will allow for continuity of movement between Dover and NC 118. The section from NC 55 to approximately 0.7 miles west of SR 1472 should be widened to a minimum of 20 feet to improve functional design and enhance safety. The section from approximately 0.7 miles west of SR 1472 to the intersection of SR 1472 and SR 1470 should be typical cross section L constructed on new location. (See Appendix A)





**FIGURE 10**  
**THOROUGHFARE PLAN**  
**CRAVEN COUNTY**

NORTH CAROLINA  
 PREPARED BY THE  
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
 STATEWIDE PLANNING BRANCH  
 IN COOPERATION WITH  
 U.S. DEPARTMENT OF TRANSPORTATION  
 FEDERAL HIGHWAY ADMINISTRATION  
 JUNE 1, 1992

LEGEND		
ROADWAY CLASSIFICATIONS	EXISTING	PROPOSED
PRINCIPAL ARTERIALS Freeway/Expressway		
OTHER		
MINOR ARTERIALS		
MAJOR COLLECTORS		
MINOR COLLECTORS		
URBAN MAJOR THOROUGHFARE		
URBAN FREEWAY OR EXPRESSWAY		
URBAN THOROUGHFARE PLANNING AREA BOUNDARY		
INTERCHANGE		

ADOPTED BY: CRAVEN COUNTY JUNE 15, 1992  
 RECOMMENDED FOR APPROVAL BY: NC DEPARTMENT OF TRANSPORTATION OR STATEWIDE PLANNING BRANCH JULY 22, 1992  
 ADOPTED BY: NC DEPARTMENT OF TRANSPORTATION AUGUST 14, 1992  
 PUBLIC HEARING: CRAVEN COUNTY JUNE 1, 1992





## VI. IMPROVEMENT PRIORITIES

An evaluation of the North Carolina highway program from administrative, historical, and financial perspectives indicates the following objectives are of greatest importance:

- To improve the North Carolina arterial system to reduce travel costs and improve travel service between urban centers.
- To improve the level of service and safety of all roads and highways on the State system in a cost effective manner.
- To encourage economic growth.
- To preserve the natural and human environment.
- To allocate funds to projects in a fair and equitable way.

(1) User benefits, (2) cost, (3) probability that a project will stimulate economic development, (4) quantification of environmental impacts, and (5) relationship of a project to the State arterial system provide a basis for evaluating projects as to how well they meet the objectives.

User benefits include cost savings resulting from an improvement project through reduction in vehicle operating costs, travel time costs, and accident costs. The estimated through travel served by a project provides a measure of the importance of a project to the State arterial system. Heavier volumes of through traffic are generally found on the more important facilities.

Estimation of environmental impacts of a project is one of the more difficult evaluations. Environmental factors usually considered in highway project evaluation can be divided into three major categories--physical, social/cultural, and economic environmental considerations (Table 11). Many of these are accounted for when a project is evaluated with respect to user benefits, cost, and economic development potential. However, certain environmental factors are generally not considered in the previously mentioned evaluations but are included in the environmental impact probability. They are the environmental impacts of a project on (1) air quality, (2) water resources, (3) soils and geology, (4) wildlife, (5) vegetation, (6) neighborhoods, (7) noise, (8) educational facilities, (9) churches, (10) park and recreational facilities, (11) historic sites and landmarks, (12) public health and safety, and (13) aesthetics. The summation of both positive and negative impact probabilities with respect to these factors provides a measure of the relative environmental impact of a project.



TABLE 11

Environmental Considerations		
Physical Environment	Social/Cultural Environment	Economic Environment
Air quality	Housing	Businesses
Water Resources	Neighborhoods	Employment
Soils and Geology	Noise	Economic Development
Wildlife	Education Facilities	Public Utilities
Vegetation	Churches	Transportation Costs
	Park and Recreational Facilities	Capital Costs
	Public Health and Safety	Operation and Maintenance Costs
	National Defense	
	Aesthetics	

The evaluation of the proposed Craven County projects with respect to user benefits, estimated costs, probability that economic development will be stimulated, environmental impact, and through travel service is given in Table 12.

#### Recommended Priorities

Recommended priorities for construction and the estimated costs (in 1991 dollars) are also shown in Table 12. The priorities are also shown graphically in Figure 11. The recommended priorities are based on needs, anticipated future traffic volumes, and the technical data developed in this report.

Since conditions are constantly changing with time, these priorities should be reevaluated periodically by the County and the Department of Transportation.

Other desirable improvements are the upgrading of the County's unpaved and narrow collectors. Although adequate from a capacity standpoint, the poor operational characteristics of these facilities will make improvements desirable to enhance their safety and functional design.

TABLE 12

Benefits Evaluation, Improvement Priorities, and Costs						
Project Priority and Description	Recommended Cross-Section	User Benefits (\$1000)	Cost (\$1000)	Economic Development Potential Probability	Environmental Impact Probability	2015 Through Traffic ADT
1. US 70, New Bern Planning Area to SR 1106 (7.30 Mi)	* N	275,621	C 14,600 R 0 T 14,600	0.75	+0.30 -0.30	10,750
2. NC 101, Havelock Planning Area to Carteret Co. (5.70 Mi)	* B & G	124,607	C 8,005 R 63 T 8,068	0.36	+0.40 -0.30	1,950
3. US 17, US 17BYP to New Bern Planning Area (7.10 Mi)	* B	92,962	C 11,086 R 258 T 11,344	0.45	+0.40 -.30	610
4. SR 1756 (Lake Rd.), Havelock Planning Area to Carteret Co (0.90 Mi)	* L	2,602	C 900 R 8 T 908	0.42	+0.40 -0.10	620
5. River Rd., SR 1440 to NC43 (1.20 Mi.)	* L	2,900	C 1,200 R 0 T 1,200	0.33	+0.10 -0.00	
6. STREETS FERRY Rd., US 70BUS to SR 1444 (0.70 Mi)	* H & L	20,600	C 5,815 R 46 T 1,322	0.15	+0.10 -0.50	520
7. NC 43, Pitt Co. to NC 118 (7.00 Mi)	* L	16,382	C 7,000 R 0 T 7,000	0.45	+0.20 -0.10	

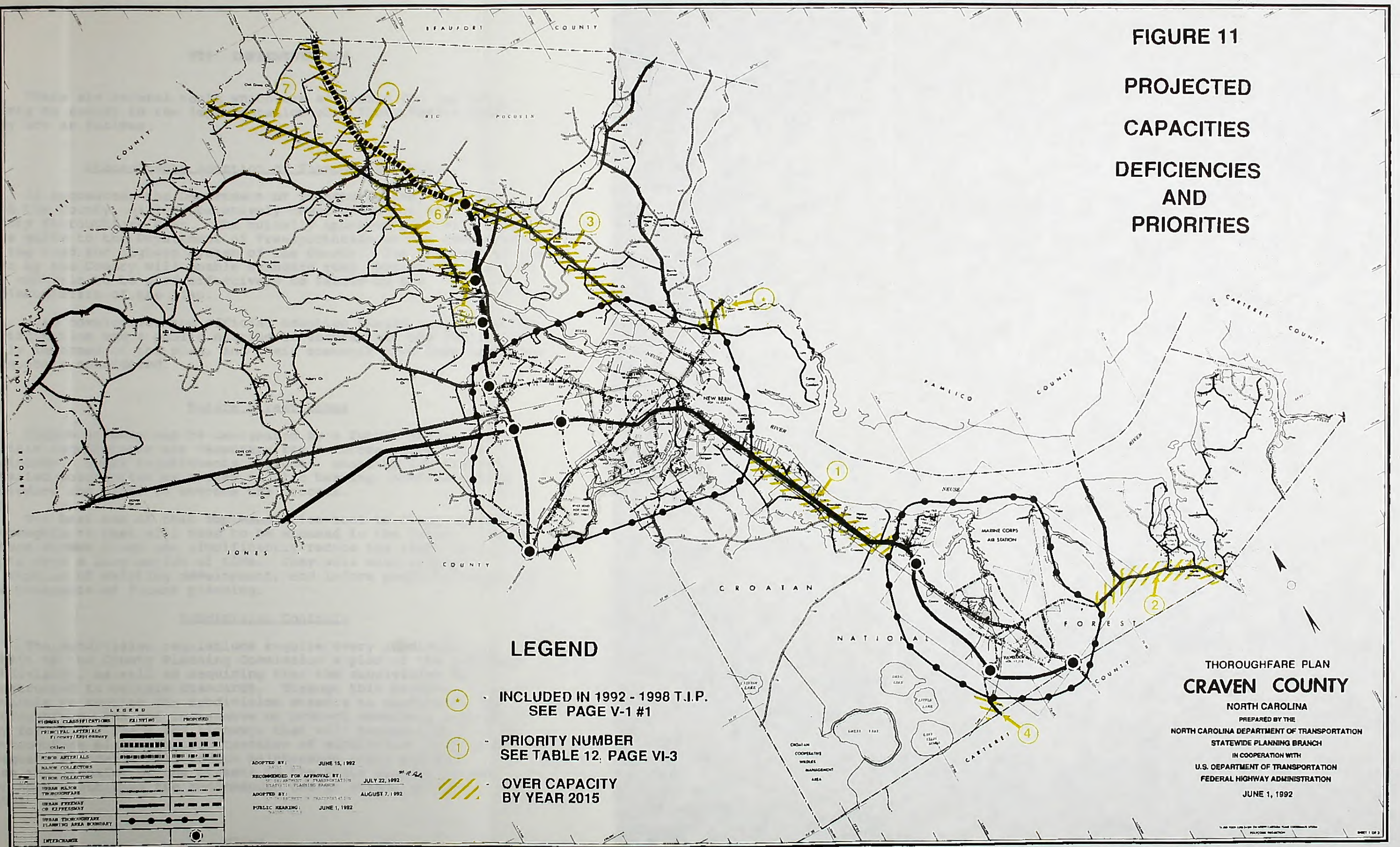
\* See Typical Cross-Sections  
in Appendix A

C - Construction  
R - Right of Way  
T - Total





**FIGURE 11**  
**PROJECTED**  
**CAPACITIES**  
**DEFICIENCIES**  
**AND**  
**PRIORITIES**



**LEGEND**

- \* INCLUDED IN 1992 - 1998 T.I.P.  
SEE PAGE V-1 #1
- 1 PRIORITY NUMBER  
SEE TABLE 12, PAGE VI-3
- OVER CAPACITY  
BY YEAR 2015

LEGEND		
ROADWAY CLASSIFICATIONS	EXISTING	PROPOSED
PRINCIPAL ARTERIALS Freeway/Expressway		
Other		
RTHOV ARTERIALS		
MAJOR COLLECTORS		
RTHOV COLLECTORS		
URBAN MAJOR THOROUGHFARE		
URBAN FREEWAY OR EXPRESSWAY		
URBAN THOROUGHFARE PLANNING AREA BOUNDARY		
INTERCHANGE		

ADOPTED BY: JUNE 15, 1992  
 RECOMMENDED FOR APPROVAL BY: JULY 22, 1992  
 ADOPTED BY: AUGUST 7, 1992  
 PUBLIC HEARING: JUNE 1, 1992

THOROUGHFARE PLAN  
**CRAVEN COUNTY**  
 NORTH CAROLINA  
 PREPARED BY THE  
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
 STATEWIDE PLANNING BRANCH  
 IN COOPERATION WITH  
 U.S. DEPARTMENT OF TRANSPORTATION  
 FEDERAL HIGHWAY ADMINISTRATION  
 JUNE 1, 1992





## VII. IMPLEMENTATION

There are several tools which are available for use by a county to assist in the implementation of a Thoroughfare Plan. They are as follows:

### State-County Adoption of Thoroughfare Plan

If requested, the Department of Transportation, together with the County, will cooperatively develop and mutually approve a County Thoroughfare Plan. The mutually approved plan will serve as a guide to the Department of Transportation in the development of the road and highway system of the County. The approval of the plan by the County will enable standard road regulations and land use controls to be used effectively to assist in the implementation of the plan.

Plan development and official adoption should include public participation and a public hearing to ensure that the public is fully informed of the plan, and their comments have been heard and adequately considered.

### Future Street Lines

Future streets can be designated by a future street line. Certain requirements are necessary for a future street line ordinance. These requirements include: enabling legislation, detailed description or survey, public hearing, administrative procedure and staff to oversee the process.

The best use of this implementation tool is along existing thoroughfares that will need to be widened in the future. Using future street lines can significantly reduce the right-of-way costs over a long period of time. They will also reduce disruption of existing development, and inform property owners of the prospects of future planning.

### Subdivision Controls

The subdivision regulations require every subdivider to submit to the County Planning Commission a plan of the proposed subdivision, as well as requiring that the subdivision be constructed to certain standards. Through this process, it is possible to require the subdivision streets to conform to the thoroughfare plan and to reserve or protect necessary rights-of-way for future roads and highways that will become a part of the thoroughfare plan. The construction of subdivision streets to adequate standards will reduce maintenance costs and will ease the transfer of the streets to the State Highway System. Appendix B outlines the recommended design standards for subdivisions.

### Zoning Ordinance

The zoning ordinance is beneficial to thoroughfare planning because planned locations of specific land uses and their densities can be realized. This provides a degree of stability on which to forecast travel and to plan future streets. Other benefits include: the establishment of standards of development which will aid traffic operation on major thoroughfares, minimize strip commercial development which creates traffic friction and increases the traffic accident potential, the requirement for off-street parking by new development with the purpose of eventual prohibition of all curb parking on major thoroughfares.

### Land Use Controls

Land use regulations are an important tool in that they regulate future land development and minimize undesirable development along roads and highways. The land use regulatory system can improve highway safety by requiring sufficient building setbacks to provide for adequate sight distances and by requiring off-street parking.

### Planned Unit Development Ordinance

Planned unit development ordinances (PUD) permit flexibility in design of larger developments, with the overall design subject to review. This ordinance can require right-of-way dedication and thoroughfare construction in accordance with the thoroughfare plan. Certain revisions may be necessary to the thoroughfare plan in order to coordinate with the development.

### Functional Design

The term "functional design" is used to describe preliminary design work done to answer questions on construction feasibility, to provide better information on right-of-way and construction cost estimates, and to give the administrative agency, developers and property owners a detailed knowledge on proposed alignments. Typically, functional designs are done on topographic mapping with a horizontal scale of 1" = 200' with 5' contours. The centerline, horizontal curves, and approximate right-of-way limits are shown. If topographic mapping is not available, functional designs are done on aerial photography or planimetric mapping.

Functional designs are expensive and time consuming and can become outdated quickly due to minor changes and adjustments. For this reason, they should only be done on an "as needed" basis.



## Dedication of Right-of-Way with Density or Development Rights Transfer

North Carolina General Statutes have been amended to provide this additional tool for plan implementation. The statutes provide that a city or county may require an applicant for subdivision approval (or any other applicant for permission pursuant to a land use control ordinance) to dedicate the right-of-way within a corridor for street or highway purposes. The city or county upon dedication allows the applicant to transfer density credits, attributable to the dedicated right-of-way, to the contiguous land owned by the applicant.

If the city or county does not require dedication of right-of-way under this section or other legal authority, but an applicant elects to dedicate the needed right-of-way, the city or county may allow the applicant to transfer the density credits, attributable to the dedicated right-of-way, to contiguous land that is part of a common development plan or to transfer severable development rights to noncontiguous land in designated receiving districts.

## Funding

The majority of the improvements are scheduled and funded by the Transportation Improvement Program. The Board of Transportation regularly conducts public meetings to obtain input from the public of their needs for highway improvements.

However, not all roadway improvements are covered by this procedure. Nearly all secondary road work is done on a county by county basis. These funds (county construction account) are used to pave unimproved roads, widen roadways, stabilize dirt roads, make minor alignment improvements, and even construct short connectors when appropriate. The County Commissioners are encouraged to work with the Division Engineer when the County's priority list is developed. Many of the minor improvements recommended may be realized by using the County's construction account funds and cooperatively developing the County's priority list with the Division Engineer.





## ***APPENDICES***







## APPENDIX A

### Typical Cross Sections

Typical cross sections recommended by the Statewide Planning Branch are shown in Appendix A, Figure 1, and listed in Appendix A, Table 1.

Cross section "A" is illustrative for controlled access freeways. The 46 foot grassed median is the least desirable median width but there could be some variation from this depending upon design considerations. Slopes of 8:1 into 3 foot drainage ditches are desirable for traffic safety. Right-of-way requirements would typically vary upward from 250 feet depending upon cut and fill requirements.

Cross section "B" is typical for four lane divided highways in rural areas which may have only partial or no control of access. The minimum median width for this cross section is 30 feet, but a wider median is desirable. Design requirements for slopes and drainage would be similar to cross section "A", but there may be some variation from this depending upon right-of-way constraints.

Cross section "C", seven lane urban, and cross section "D", five lane urban, are typical for major thoroughfares where frequent left turns are anticipated as a result of abutting development or frequent street intersections.

Cross sections "E" and "F" are used on major thoroughfares where left turns and intersecting streets are not as frequent. Left turns would be restricted to a few selected intersections.

Cross section "G" is recommended for urban boulevards or parkways to enhance the urban environment and to improve the compatibility of major thoroughfares with residential areas. A minimum median width of 24 feet is recommended with 30 feet being desirable.

Typical cross section "H" is recommended for major thoroughfares where projected travel indicates a need for four travel lanes but traffic is not excessively high, left turning movements are light, and right-of-way is restricted. An additional left turn lane would probably be required at major intersections.

Thoroughfares which are proposed to function as one-way traffic carriers would typically require cross section "I". Cross section "J" and "K" are usually recommended for minor thoroughfares since these facilities usually serve both land service and traffic service functions. Cross section "J" would be used on those minor thoroughfares where parking on both sides is needed as a result of more concentrated development.

Cross section "L" is used in rural areas or for staged construction of a wider multilane cross section. On some thoroughfares projected traffic volumes may indicate that two travel lanes will adequately serve travel for a considerable period of time.

The curb and gutter urban cross sections all illustrate the sidewalk adjacent to the curb with a buffer or utility strip between the sidewalk and the minimum right-of-way line. This permits adequate setback for utility poles. If it is desired to move the sidewalk further away from the street to provide added separation for pedestrians or for aesthetic reasons, additional right-of-way must be provided to insure adequate setback for utility poles.

Rights-of-way shown for the typical cross sections are the minimum rights-of-way required to contain the street, sidewalks, utilities, and drainage facilities. Cut and fill requirements may require wither additional right-of-way or construction easements. Obtaining construction easements is becoming the more common practice for urban thoroughfare construction.

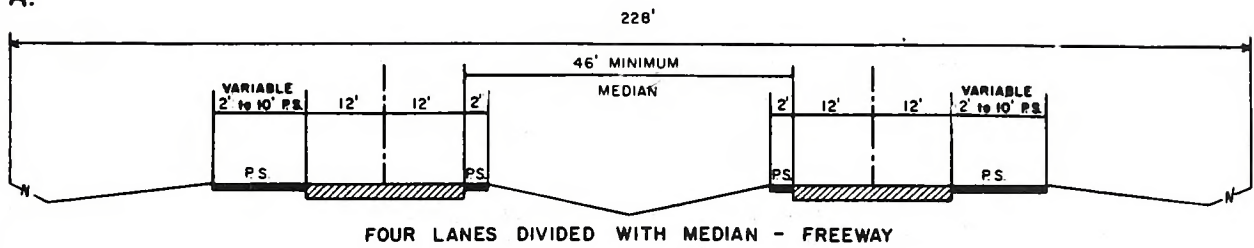
If there is sufficient bicycle traffic along the thoroughfare to justify a bicycle lane or bikeway, additional right-of-way may be required to allow for the bicycle facilities. The North Carolina Bicycle Facility and Program Handbook should be consulted for design standards for bicycle facilities.

Recommended typical cross sections for thoroughfares were derived on the basis of projected traffic, existing capacities, desirable levels of service and available right-of-way.

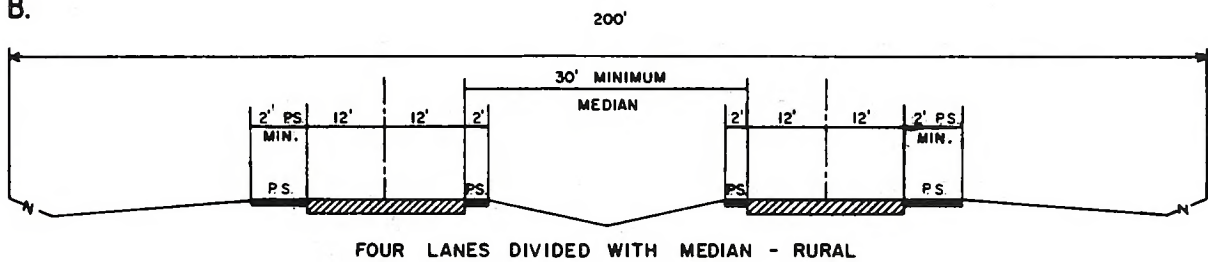


# TYPICAL THOROUGHFARE CROSS SECTIONS

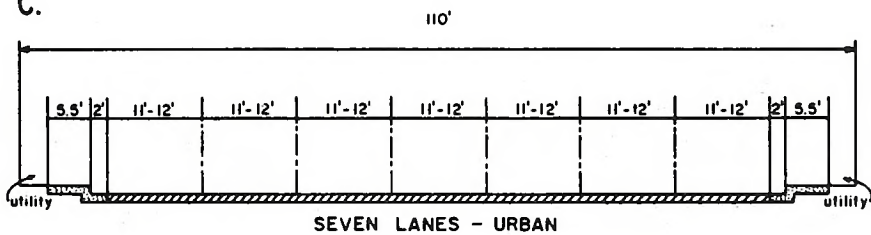
A.



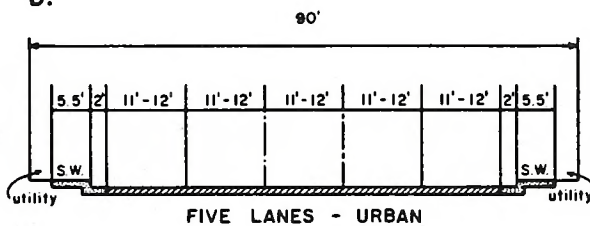
B.



C.



D.



E.

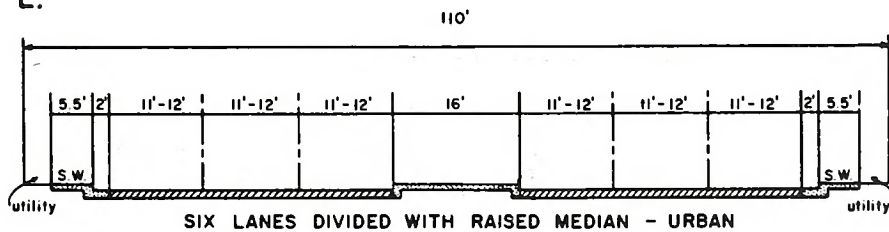
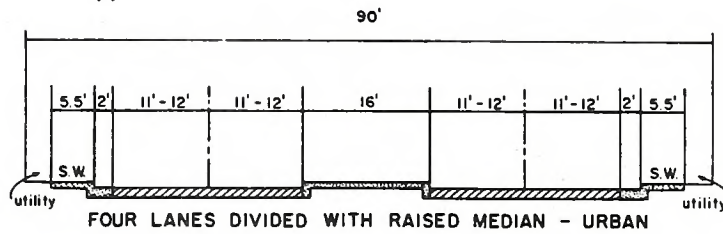


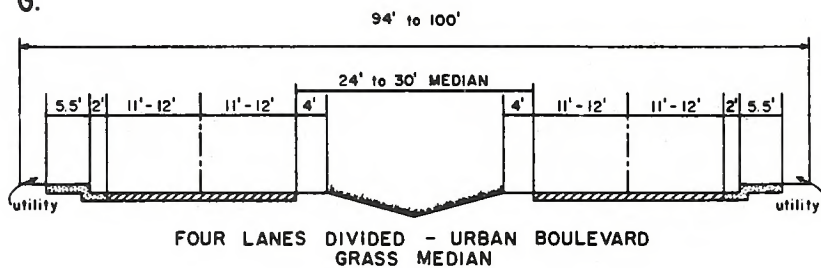
FIGURE A-1

# TYPICAL THOROUGHFARE CROSS SECTIONS (CONTINUED)

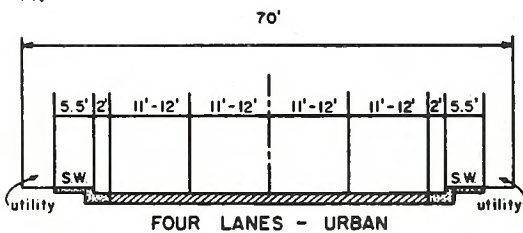
F.



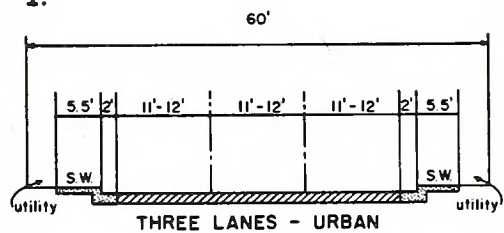
G.



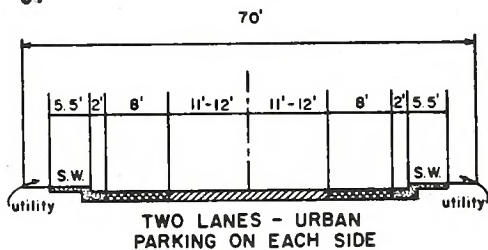
H.



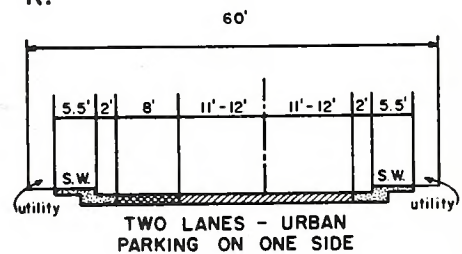
I.



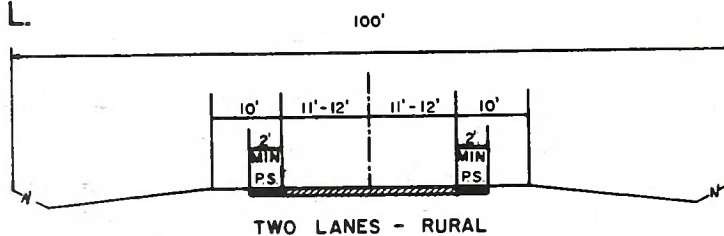
J.



K.



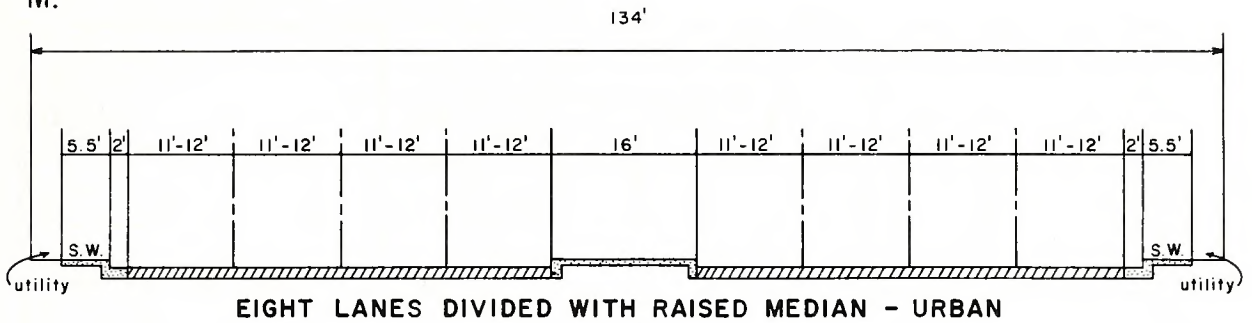
L.



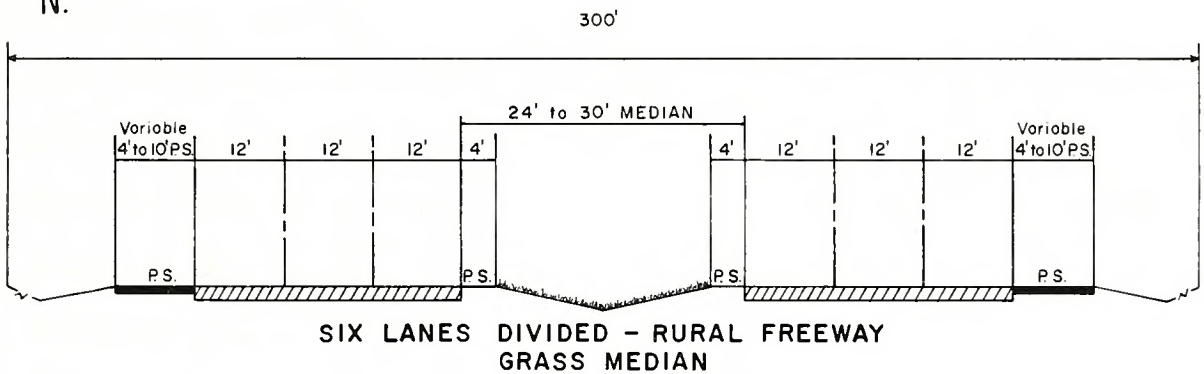
# TYPICAL THOROUGHFARE CROSS SECTIONS

(CONTINUED)

M.



N.







**TABLE A1  
CRAVEN COUNTY  
THOROUGHFARE PLAN  
STREET TABULATION AND RECOMMENDATIONS**

CRAVEN COUNTY:  FACILITY & SECTION	EXISTING X-SECTION			PRACTICAL* CAPACITY	1989 ADT's	2015 ADT's	RECOMMENDED CROSS-SECTION	
	DIST. (Mi)	RDWY (Ft)	ROW (Ft)	CURRENT (FUTURE)			RDWY (ULT)	ROW (ULT)
<b>+</b> <b>US 17</b>								
BEAUFORT COUNTY - SR 1640	3.40	24	100	6,500	4,000	5,400	B <sup>m</sup>	200
SR 1640 - US 17 BUS	1.10	24	150	6,500	4,400	6,600	B	200
US 17 BUS - US 17 BUS/ NC 43	3.60	24	150	6,500	3,100	9,100	B	200
US 17 BUS/ NC 43 - SR 1436	2.50	24	150	6,500	6,400	13,700	B	200
NEW BERN SR 1436 - PLANNING AREA	7.10	24	150	6,500	6,000	12,200	B	200
<b>+</b> <b>US 17 BYPASS</b>								
NEW BERN US 17 - PLANNING AREA	3.60	--	---	(50,000)	-----	23,000	A <sup>m</sup>	300
<b>US 17 BUSINESS</b>								
US 17 BYP - SR 1638	0.70	22	100	9,000	1,400	2,300	ADQ <sup>++</sup>	ADQ
SR 1638 - SR 1628	1.70	40	60	20,000	7,700	15,700	ADQ	ADQ
SR 1628 - US 17 BYP	1.20	24	150	10,200	3,440	6,200	ADQ	ADQ
<b>US 70</b>								
JONES COUNTY - SR 1224	7.00	48	370	50,000	6,400	13,000	ADQ	ADQ
West of NEW BERN SR 1224 - PLANNING AREA	2.10	48	370	50,000	6,800	15,000	ADQ	ADQ
East of NEW BERN PLANNING AREA - SR 1106	7.30	48	260	35,000	18,100	43,000	N <sup>m</sup>	ADQ
* See FIGURE A1 for Typical Roadway Cross-Sections  + PROJECT is in 1992 - 1998 Transportation Improvement Program (TIP)  ++ ADEQUATE				@ Practical Capacity is defined as the level of service for the Functional Classifica- tion of the road as defined in Table 6.				

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CRAVEN COUNTY  
THOROUGHFARE PLAN  
STREET TABULATION AND RECOMMENDATIONS**

CRAVEN COUNTY: FACILITY & SECTION	EXISTING X-SECTION			PRACTICAL <sup>®</sup> CAPACITY	1989 ADT's	2015 ADT's	RECOMMENDED CROSS-SECTION	
	DIST. (Mi)	RDWY (Ft)	ROW (Ft)	CURRENT (FUTURE)			RDWY (ULT)	ROW (ULT)
<b>NC 41</b>							See Write- Up p. 41	
JONES COUNTY - US 70	0.10	24	100	10,200	8,000	---		
<b>NC 43</b>								
PITT COUNTY - SR 1646	5.50	22	100	9,000	2,900	8,200	L <sup>++</sup>	ADQ
SR 1646 - NC 118	1.50	22	100	9,000	4,100	9,700	L	ADQ
NC 118 - US 17 BUS	0.50	40	100	20,000	6,200	18,800	ADQ	ADQ
US 17 - SR 1400	3.00	24	150	10,200	8,200	6,500	ADQ	ADQ
NEW BERN SR 1400 - PLANNING AREA	3.00	24	150	10,200	8,200	6,500	ADQ	ADQ
<b>NC 55</b>								
LENOIR COUNTY - SR 1475	3.10	24	60	10,200	1,221	2,600	ADQ	ADQ
SR 1475 - SR 1474	3.50	20	60	8,300	1,221	2,600	22	ADQ
SR 1474 - SR 1232	8.00	20	60	8,300	1,500	2,300	22	ADQ
WEST NEW BERN SR 1232 - PLANNING AREA	8.00	20	60	8,300	1,700	3,500	22	ADQ
EAST NEW BERN PLANNING AREA - PAMLICO CO.	1.2	24	100	10,200	8,500	17,300	D <sup>++</sup>	ADQ
<b>NC 101</b>								
HAVELOCK PLANNING AREA - NC 306	1.40	20	100	8,300	4,270	15,000	G <sup>++</sup>	ADQ
* See FIGURE A1 for Typical Roadway Cross-Sections				® Practical Capacity is defined as the level of service for the Functional Classifica- tion of the road as defined in Table 6.				
+ PROJECT is in 1992 - 1998 Transportation Improvement Program (TIP)								
++ ADEQUATE								



**TABLE A1  
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STREET TABULATION AND RECOMMENDATIONS**

CRAVEN COUNTY:  FACILITY & SECTION	EXISTING X-SECTION			PRACTICAL <sup>®</sup> CAPACITY	1989 ADT's	2015 ADT's	RECOMMENDED CROSS-SECTION	
	DIST. (Mi)	RDWY (Ft)	ROW (Ft)	CURRENT (FUTURE)			RDWY (ULT)	ROW (ULT)
<b>NC 101</b>								
1 MILE WEST NC 306 - of SR 1715	2.20	20	100	8,300	4,200	13,000	B <sup>™</sup>	150
1 MILE WEST 1 MILE EAST of SR 1715 - of SR 1715	2.00	20	100	8,300	4,200	13,000	G <sup>™</sup>	ADQ <sup>++</sup>
1 MILE EAST of SR 1715 - CARTERET CO.	0.10	20	100	8,300	4,200	13,000	B	150
<b>NC 118</b>								
PITT COUNTY - SR 1458	4.00	20	100	8,300	1,000	1,200	ADQ	ADQ
SR 1458 - SR 1444	4.70	20	100	8,300	1,000	3,100	22	ADQ
SR 1444 - NC 43	2.20	20	100	8,300	1,000	2,000	22	ADQ
<b>NC 306</b>								
.35 MILES SOUTH OF NC 101 - CHERRY BRANCH FERRY	4.15	24	100	10,200	900	2,000	ADQ	ADQ
.35 MILES SOUTH OF CHERRY CHERRY BRANCH FERRY - BRANCH	0.35	24	220	1,060 <sup>***</sup>	900	2,000	ADQ <sup>+</sup>	ADQ
<b>SR 1003 / AURORA RD.</b>								
BEAUFORT COUNTY - SR 1611	4.90	18	100	7,200	1,329	2,900	22	ADQ
<b>SR 1004 / WILLIAMS RD.</b>								
JONES COUNTY - SR 1101	1.20	24	100	10,200	540	1,700	ADQ	ADQ
SR 1101 - SR 1920	0.10	18	60	7,200	540	1,700	20	ADQ
* See FIGURE A1 for Typical Roadway Cross-Sections				** MAXIMUM FERRY CAPACITY				
+ PROJECT is in 1992 - 1998 Transportation Improvement Program (TIP)				® Practical Capacity is defined as the level of service for the Functional Classifica- tion of the road as defined in Table 6.				
++ ADEQUATE								

**TABLE A1  
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CRAVEN COUNTY: FACILITY & SECTION	EXISTING X-SECTION			PRACTICAL* CAPACITY	1989 ADT's	2015 ADT's	RECOMMENDED CROSS-SECTION	
	DIST. (Mi)	RDWY (Ft)	ROW (Ft)	CURRENT (FUTURE)			RDWY (ULT)	ROW (ULT)
SR 1005 / OLD US 70								
JONES COUNTY - JOHNSON ST.	0.30	24	150	10,200	1,900	4,200	ADQ**	ADQ
JOHNSON ST. - N. COMPANY ST.	1.40	40	150	20,000	1,900	4,200	ADQ	ADQ
N. COMPANY ST. - SR 1257	5.40	24	100	10,200	2,597	6,000	ADQ	ADQ
0.4 MILES EAST OF SR 1257 - SR 1256	1.00	26	100	10,400	2,597	6,000	ADQ	ADQ
0.4 MILE EAST NEW BERN OF SR 1256 - PLANNING AREA	8.30	24	100	10,200	1,989	5,000	ADQ	ADQ
SR 1400 / RIVER RD.								
SR 1440 - NC 43	1.20	22	150	9,000	4,300	8,200	L <sup>+</sup>	ADQ
SR 1440 / STREETS FERRY RD.								
NC 43 - SR 1444	0.70	22	60	9,000	3,500	10,000	H	70
SR 1444 - SR 1400	4.50	22	60	9,000	3,500	8,000	L	70
ST. DELIGHTS SR 1611 / CHURCH RD.								
SR 1003 - SR 1615	2.60	18	100	7,200	519	1,100	20	ADQ
ST. DELIGHTS SR 1615 / CHURCH RD.								
NEW BERN SR 1611 - PLANNING AREA	5.30	18	100	7,200	1,302	2,800	22	ADQ
SR 1656 / BAILY LN.								
NC 43 - US 17 BUS	0.40	20	60	8,300	1,000	2,000	22	ADQ
* See FIGURE A1 for Typical Roadway Cross-Sections  ** ADEQUATE								
				@ Practical Capacity is defined as the level of service for the Functional Classifica- tion of the road as defined in Table 6.				

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THOROUGHFARE PLAN  
STREET TABULATION AND RECOMMENDATIONS**

CRAVEN COUNTY:  FACILITY & SECTION	EXISTING X-SECTION			PRACTICAL* CAPACITY	1989 ADT's	2015 ADT's	RECOMMENDED CROSS-SECTION	
	DIST. (Mi)	RDWY (Ft)	ROW (Ft)	CURRENT (FUTURE)			RDWY (ULT)	ROW (ULT)
SR 1756 / LAKE RD. HAVELOCK PLANNING AREA - CARTERET CO.	0.90	18	60	7,200	3,000	6,200	1"	70
SR 1001 / TRENTON RD. US 70 - SR 1005	2.03	18	100	7,200	1,067	2,300	22	ADQ**
SR 1003 / AURORA RD. SR 1611 - US 17	4.20	18	100	7,200	1,276	2,800	22	ADQ
SR 1224 / TUSCARORA RD. NEW BERN PLANNING AREA - US 70	2.80	20	60	8,300	888	3,000	22	ADQ
US 70 - NC 55	3.30	18	100	7,200	600	1,000	20	ADQ
SR 1256 / WINTERGREEN RD. NC 55 - SR 1245	4.30	18	60	7,200	800	1,700	20	ADQ
SR 1245 - AVERY ST. AVERY ST. - SR 1005	1.30 0.30	18 40	60 60	7,200 20,000	1,625 1,625	3,500 3,500	22 ADQ	ADQ ADQ
SR 1262 / DOVER-BARNWELL RD. (N. WEST ST. in DOVER) SR 1005 - 200' N. SR 1005 200' N. SR 1005 - NC 55	0.04 8.26	40 20	60 60	20,000 8,300	350 1,450	800 3,100	ADQ 22	ADQ ADQ
* See FIGURE A1 for Typical Roadway Cross-Sections  ** ADEQUATE				@ Practical Capacity is defined as the level of service for the Functional Classifica- tion of the road as defined in Table 6.				



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STREET TABULATION AND RECOMMENDATIONS**

CRAVEN COUNTY:  FACILITY & SECTION	EXISTING X-SECTION			PRACTICAL <sup>®</sup> CAPACITY	1989 ADT's	2015 ADT's	RECOMMENDED CROSS-SECTION	
	DIST. (Mi)	RDWY (Ft)	ROW (Ft)	CURRENT (FUTURE)			RDWY (ULT)	ROW (ULT)
<b>SR 1400 / RIVER RD.</b>								
NC 118 - SR 1448	4.20	20	60	8,300	1,061	2,600	22	ADQ <sup>++</sup>
SR 1448 - SR 1443	5.20	20	60	8,300	897	2,000	22	ADQ
SR 1443 - SR 1440	3.80	20	60	8,300	4,282	8,100	22	ADQ
<b>SR 1401 / SPRING GARDEN RD.</b>								
NC 55 - SR 1424	3.10	18	60	7,200	646	1,600	20	ADQ
SR 1424 - NC 43	2.05	18	60	7,200	1,300	3,200	22	ADQ
<b>SR 1444 / PINEY NECK RD.</b>								
NC 118 - SR 1440	3.50	18	60	7,200	900	2,000	22	ADQ
<b>SR 1470 / MAPLE CYPRESS RD.</b>								
SR 1472 - SR 1400	1.80	18	130	7,200	600	1,300	20	ADQ
<b>SR 1471 / BELLTOWN RD.</b>								
0.7 MILES WEST NC 55 - OF SR 1472	1.20	18	60	7,200	690	1,500	20	ADQ
0.7 MILES WEST OF SR 1472 - SR 1470	0.70	--	---	(10,200)	----	1,500	L*	70
* See FIGURE A1 for Typical Roadway Cross-Sections  ++ ADEQUATE				® Practical Capacity is defined as the level of service for the Functional Classifica- tion of the road as defined in Table 6.				

**APPENDIX B**  
**RECOMMENDED SUBDIVISION ORDINANCES**

**DEFINITIONS**

**I. Streets and Roads:**

**A. Rural Roads**

1. Principal Arterial - A rural link in a highway system serving travel, and having characteristics indicative of substantial statewide or interstate travel and existing solely to serve traffic. This network would consist of Interstate routes and other routes designated as principal arterials.
2. Minor Arterial - A rural roadway joining cities and larger towns and providing intra-state and inter-county service at relatively high overall travel speeds with minimum interference to through movement.
3. Major Collector - A road which serves major intra-county travel corridors and traffic generators and provides access to the Arterial system.
4. Minor Collector - A road which provides service to small local communities and traffic generators and provides access to the Major Collector system.
5. Local Road - A road which serves primarily to provide access to adjacent land, over relatively short distances.

**B. Urban Streets**

1. Major Thoroughfares - Major thoroughfares consist of Interstate, other freeway, expressway, or parkway roads, and major streets that provide for the expeditious movement of high volumes of traffic within and through urban areas.
2. Minor Thoroughfares - Minor thoroughfares perform the function of collecting traffic from local access streets and carrying it to the major thoroughfare system. Minor thoroughfares may be used to supplement the major thoroughfare system by facilitating minor through-traffic movements and may also serve abutting property.
3. Local Street - A local street is any street not on a higher order urban system and serves primarily to provide direct access to abutting land.

### C. Specific Type Rural or Urban Streets

1. Freeway, expressway, or parkway - Divided multilane roadways designed to carry large volumes of traffic at high speeds. A freeway provides for continuous flow of vehicles with no direct access to abutting property and with access to selected crossroads only by way of interchanges. An expressway is a facility with full or partial control of access and generally with grade separations at major intersections. A parkway is a for non-commercial traffic, with full of partial control or access.
2. Residential Collector Street - A local street which serves as a connector street between local residential streets and the thoroughfare system. Residential collector streets typically collect traffic from 100 to 400 dwelling units.
3. Local Residential Street - Cul-de-sacs, loop streets less than 2,500 feet in length, or streets less than one mile in length that do not connect thoroughfares, or serve major traffic generators, and do not collect traffic from more than 100 dwelling units.
4. Cul-de-sac - A short street having only one end open to traffic and the other end being permanently terminated and a vehicular turn-around provided.
5. Frontage Road - A road that is parallel to a partial or full access controlled facility and provides access to adjacent land.
6. Alley - A strip of land, owned publicly or privately, set aside primarily for vehicular service access to the back side of properties otherwise abutting on a street.

### II. Property

- A. Building Setback Line - A line parallel to the street in front of which no structure shall be erected.
- B. Easement - A grant by the property owner for use by the public, a corporation, or person(s), of a strip of land for a specific purpose.
- C. Lot - A portion of a subdivision, or any other parcel of land, which is intended as a unit for transfer of ownership or for development or both. The word "lot" includes the words "plat" and "parcel".

### III. Subdivision

- A. Subdivider - Any person, firm, corporation or official agent thereof, who subdivides or develops any land deemed to be a subdivision.



- B. Subdivision - All divisions of a tract or parcel of land into two or more lots, building sites, or other divisions for the purpose, immediate or future, of sale or building development and all divisions of land involving the dedication of a new street or change in existing streets; provided, however, that the following shall not be included within this definition nor subject to these regulations: (1) the combination or recombination of portions of previously platted lots where the total number of lots is not increased and the resultant lots are equal to or exceed the standards contained herein; (2) the division of land into parcels greater than ten acres where no street right-of-way dedication is involved, (3) widening or opening of streets; (4) the division of a tract in single ownership whose entire area is no greater than two acres into not more than three lots, where no street right-of-way dedication is involved and where the resultant lots are equal to or exceed the standards contained herein.
- C. Dedication - A gift, by the owner, of his property to another party without any consideration being given for the transfer. The dedication is made by written instrument and is completed with an acceptance.
- D. Reservation - Reservation of land does not involve any transfer of property rights. It constitutes an obligation to keep property free from development for a stated period of time.

## DESIGN STANDARDS

### I. Streets and Roads

The design of all roads within Plymouth shall be in accordance with the accepted policies of the North Carolina Department of Transportation, Division of Highways, as taken or modified from the American Association of State Highway Officials' (AASHTO) manuals.

The provision of street rights-of-way shall conform and meet the recommendations of the Thoroughfare Plan, as adopted by the Town of Plymouth.

The proposed street layout shall be coordinated with the existing street system of the surrounding area. Normally the proposed streets should be the extension of existing streets if possible.

- A. Right-of-way Widths - Right-of-way (ROW) widths shall not be less than the following and shall apply except in those cases where ROW requirements have been specifically set out the Thoroughfare Plan.

1. Rural	Min. ROW
a. Principle Arterial	
Freeways	350 ft.
Other	200 ft.
b. Minor Arterial	100 ft.
c. Major Collector	100 ft.
d. Minor Collector	80 ft.
e. Local Road	60 ft. <sup>1</sup>
2. Urban	
a. Major Thoroughfare other than Freeway and Expressway	90 ft.
b. Minor Thoroughfare	70 ft.
c. Local Street	60 ft. <sup>1</sup>
d. Cul-de-sac	Variable <sup>2</sup>

The subdivider will only be required to dedicate a maximum of 100 feet of right-of-way. In cases where over 100 feet of right-of-way is desired, the subdivider will be required only to reserve the amount in excess of 100 feet. On all cases in which right-of-way is sought for a fully controlled access facility, the subdivider will only be required to make a reservation. It is strongly recommended that subdivisions provide access to properties from internal streets, and that direct property access to major thoroughfares, principle and minor arterials, and major collectors be avoided. Direct property access to minor thoroughfares is also undesirable.

A partial width right-of-way, not less than sixty feet in width, may be dedicated when adjoining undeveloped property that is owned or controlled by the subdivider; provided that the width of a partial dedication be such as to permit the installation of such facilities as may be necessary to serve abutting lots. When the said adjoining property is subdivided, the remainder of the full required right-of-way shall be dedicated.

- B. Street Widths - Widths for street and road classifications other than local shall be as recommended by the Thoroughfare Plan. Width of local roads and streets shall be as follows:

- 
- <sup>1</sup> The desirable minimum right-of-way (ROW) is 60 ft. If curb and gutter is provided, 50 feet of ROW is adequate on local residential streets.
- <sup>2</sup> The ROW dimension will depend on radius used for vehicular turnaround. Distance from edge of pavement of turnaround to ROW should not be less than distance from edge of pavement to ROW on street approaching turnaround.

1. Local Residential

Curb and Gutter section: 26 feet, face to face of curb  
Shoulder section: 20 feet to edge of pavement, 4 foot  
shoulders

2. Residential Collector

Curb and Gutter section: 34 feet, face to face of curb  
Shoulder section: 20 feet to edge of pavement, 6 foot  
shoulders

C. Geometric Characteristics - The standards outlined below shall apply to all subdivision streets proposed for addition to the State Highway System or Municipal Street System. In cases where a subdivision is sought adjacent to a proposed thoroughfare corridor, the requirements of dedication and reservation discussed under Right-of-Way shall apply.

1. Design Speed - The design speed for a roadway should be a minimum of 5 mph greater than the posted speed limit. The design speeds for subdivision type streets shall be:

DESIGN SPEEDS			
Facility Type	<u>Design Speed</u>		
	Desirable	Minimum Level	Rolling
<b>RURAL</b>			
Minor Collector Roads	60	50	40
Local roads including Residential Collectors and Local Residential	50	50a	40a
<b>URBAN</b>			
Major Thoroughfares other than Freeway or Expressway	60	50	50
Minor Thoroughfares	60	50	40
Local Streets	40	40b	30b

---

a Based on projected annual average daily traffic of 400-750. In cases where road will serve a limited area and small number of dwelling units, minimum design speeds can be reduced further.

b Based on projected annual average daily traffic of 50-250.



2. Maximum and Minimum Grades

- a. The maximum grades in percent shall be:

MAXIMUM VERTICAL GRADE		
Design Speed	Terrain	
	Level	Rolling
60	4	5
50	5	6
40	6	7
30		9

- b. Minimum grade should not be less than 0.5% .
- c. Grades for 100 feet each way from intersections (measured from edge of pavement) should not exceed 5%.
- d. For streets and roads with projected annual average daily traffic less than 250, short grades less than 500 feet long, may be 150% of the value in the above table.

3. Minimum Sight Distance - In the interest of public safety, no less than the minimum sight distance applicable shall be provided. Vertical curves that connect each change in grade shall be provided and calculated using the following parameters:

SIGHT DISTANCE				
Design Speed	30	40	50	60
Stopping Sight Distance				
Minimum (ft.)	200	275	400	525
Desirable Minimum (ft.)	200	325	475	650
*Minimum K Value for:				
Crest curve	30	80	160	310
Sag curve	40	70	110	160

(General practice calls for vertical curves to be multiples of 50 feet. Calculated lengths shall be rounded up in each case.)

- \* K is a coefficient by which the algebraic difference in grade may be multiplied to determine the length in feet of the vertical curve which will provide the desired sight distance.

Sight distance provided for stopped vehicles at intersections should be in accordance with "A Policy on Geometric Design of Highways and Streets, 1984".

4. The "Superelevation Table" below shows the maximum degree of curve and related maximum superelevation for design speeds. The maximum rate of roadway superelevation (e) for rural roads with no curb and gutter of 0.08. The maximum rate of superelevation for urban streets with curb and gutter is 0.06, with 0.04 being desirable.

SUPERELEVATION TABLE			
Design Speed	Maximum e	Minimum Radius ft.	Max. Deg. of Curve.
30	0.04	302	19 00'
40	0.04	573	10 00'
50	0.04	955	6 00'
60	0.04	1,528	3 45'
30	0.06	273	21 00'
40	0.06	509	11 15'
50	0.06	849	6 45'
60	0.06	1,380	4 15'
30	0.08	252	22 45'
40	0.08	468	12 15'
50	0.08	764	7 30'
60	0.08	1,206	4 45'

e = rate of roadway superelevation, foot per foot

#### D. Intersections

1. Streets shall be laid out so as to intersect as nearly as possible at right angles, and no street should intersect any other street at an angle less than sixty-five (65) degrees.
2. Property lines at intersections should be set so that the distance from the edge of pavement, of the street turnout, to the property line will be at least as great as the distance from the edge of pavement to the property line along the intersecting streets. This property line can be established as a radius or as a sight triangle. Greater offsets from the edge of pavement to the property lines will be required, if necessary, to provide sight distance for the stopped vehicle on the side street.
3. Off-set intersections are to be avoided. Intersections which cannot be aligned should be separated by a minimum length of 200 feet between survey centerlines.

#### E. Cul-de-sacs

Cul-de-sacs shall not be more than five hundred (500) feet in length, for speed control, visual detection of a dead end street, and for fire protection. The distance from the edge of pavement on the vehicular turnaround to the right-of-way line should not be less than the distance from the edge of pavement to right-of-way line on the street approaching the turnaround. Cul-de-sacs should not be used to avoid connection with an existing street or to avoid the extension of an important street.

#### F. Alleys

1. Alleys shall be required to serve lots used for commercial and industrial purposes except that this requirement may be waived where other definite and assured provision is made for service access. Alleys shall not be provided in residential subdivisions unless necessitated by unusual circumstances.
2. The width of an alley shall be at least twenty (20) feet.
3. Deadend alleys shall be avoided where possible, but if unavoidable, shall be provided with adequate turnaround facilities at the deadend as may be required by the Planning Board.

#### G. Permits For Connection To State Roads

An approved permit is required for connection to any existing state system road. This permit is required prior to any construction on the street or road. The application is available at the office of the District Engineer of the Division of Highways.

#### H. Offsets To Utility Poles

Poles for overhead utilities should be located clear of roadway shoulders, preferably a minimum of at least 30 feet from the edge of pavement. On streets with curb and gutter, utility poles shall be set back a minimum distance of 6 feet from the face of curb.

#### I. Wheel Chair Ramps

All street curbs being constructed or reconstructed for maintenance purposes, traffic operations, repairs, correction of utilities, or altered for any reason, shall provide wheelchair ramps for the physically handicapped at intersections where both curb and gutter and sidewalks are provided and at other major points of pedestrian flow.



J. Horizontal Width on Bridge Deck

1. The clear roadway widths for new and reconstructed bridges serving 2 lane, 2 way traffic should be as follows:

- a. Shoulder section approach

- i. Under 800 ADT design year

Minimum 28 feet width face to face of parapets of rails or pavement width plus 10 feet, whichever is greater.

- ii. 800 - 2000 ADT design year

Minimum 34 feet width face to face of parapets of rails or pavement width plus 12 feet, whichever is greater.

- iii. Over 2000 ADT design year

Minimum width of 40 feet, desirable width of 44 feet width face to face of parapets or rails.

- b. Curbs and gutter approach

- i. Under 800 ADT design year

Minimum 24 feet face to face of curbs.

- ii. Over 800 ADT design year

Width of approach pavement measured face to face of curbs.

Where curb and gutter sections are used on roadway approaches, curbs on bridges shall match the curbs on approaches in height, in width of face to face of curbs, and in crown drop. The distance from face of curb to face of parapet or rail shall be 1'6" minimum, or greater if sidewalks are required.

2. The clear roadway widths for new and reconstructed bridges having 4 or more lanes serving undivided two-way traffic should be as follows:

- a. Shoulder section approach - Width of approach pavement plus width of usable shoulders on the approach left and right. (Shoulder width 8' minimum, 10' desirable.)

- b. Curb and gutter approach - Width of approach pavement measured face to face of curbs.



## APPENDIX C

### CITY OF HAVELOCK

#### RECOMMENDED PLAN

The proposed improvements are indicated on the accompanying map. A brief description of each proposed project follows:

#### Major Thoroughfares

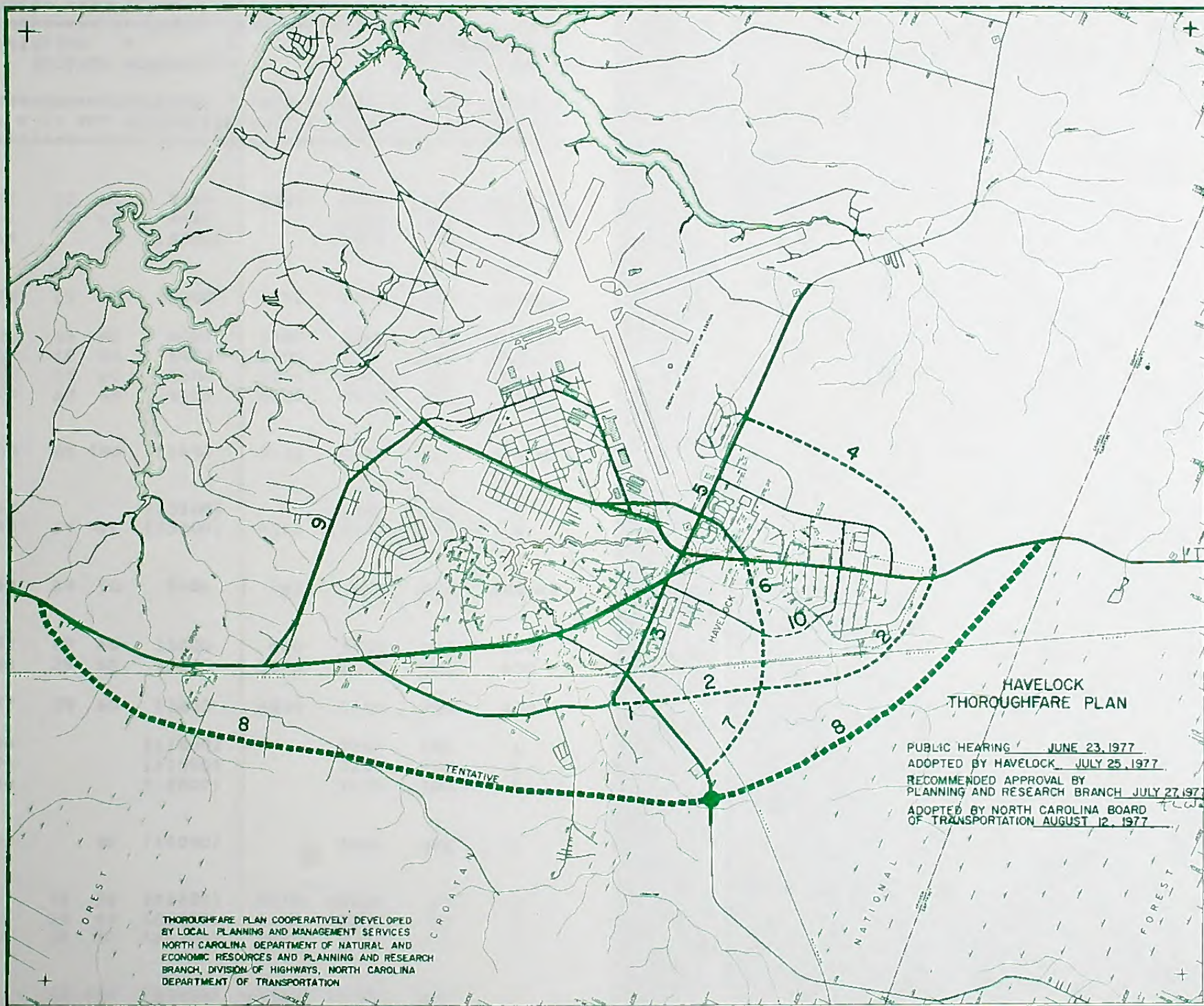
1. Greenfield Boulevard Extension(a): a two lane extension of SR 1746 to SR 1756.
2. Greenfield Boulevard Extension(b): a two lane extension from SR 1756 to US 70.
3. Miller Boulevard: widen the existing two lane roadway to four lanes.
4. McCotter Boulevard: construct a new two lane facility from US 70 to NC 101.
5. NC 101: widen NC 101 to multi-lane urban sections, seven lanes from US 70 to Cunningham and four lanes from Cunningham to Geiger.
6. Secondary Road 1735 Extension(a): construct a new urban two lane curb & gutter section with allowance for parking on both sides from US 70 to Belltown Road.
7. Secondary Road 1735 Extension(b): construct a new rural two lane section from Belltown Road to SR 1756.
8. US 70 Bypass: construct a new four lane, controlled access facility around the Havelock area.
9. West Base Access: construct a new entrance to Cherry Point from US 70 west of Havelock.

#### Minor Thoroughfare

10. Belltown Road Extension: construct a new urban two lane curb & gutter section with allowance for parking on both sides to Pineview Street.







# RECOMMENDED THOROUGHFARE PLAN



## LEGEND

THOROUGHFARE	EXISTING	PROPOSED
MAJOR	Solid line	Dashed line
MINOR	Solid line	Dashed line
PROPOSED INTERCHANGE		Circle with cross
PROPOSED FREE-WAY OR EXPRESSWAY		Dotted line

THE UNIVERSITY OF CHICAGO  
6256  
1917

V



## APPENDIX C

TABLE 1

## THOROUGHFARE PLAN STREET TABULATION AND RECOMMENDATIONS

*****								
* EXISTING * * * * *								
* X - SECTION *CAPACITY* * * * X - SECTION *								
*****								
* FACILITY & SECTION	*DIST*	RDWY*	ROW*	CURRENT *	1978 *	2005 *	ROW	*RDWAY*
	* MI *	FT	*FT	*(FUTURE)*	ADTS	ADTS	*(ULT)	*(ULT)*
*****								
BELLTOWN ROAD								
MILLER-WOODHAVEN	.27	20	60	9400	2320	6300	ADQ	ADQ(J)
WOODHAVEN-SR 1735 EXT	.51	20	60	9400		2100	ADQ	ADQ(J)
* SR 1735 EXT.-HOLLYWOOD	.45			(13000)		5200	70	J
CHURCH ROAD (SR 1763)								
US 70-MILLER	.78	24	60	11000	1540	5100	ADQ	ADQ(K)
CHURCH ROAD EXT. (SR1756)								
MILLER-GREENFIELD EXT.	.26	18	60	8400	1500	3200	ADQ	ADQ(L)
GREENFIELD-SR 1735 EXT.	.69	18	60	8400	1400	2200	ADQ	ADQ(L)
SR 1735 EXT.-US 70 BYP.	.23	18	60	8400	1170	3750	ADQ	ADQ(L)
US 70 BYP.-S. STUDY LIM	1.12	18	60	8400	1120	2400	ADQ	ADQ(L)
CUNNINGHAM BLVD. (SR 1735)								
NC 101-US 70	.50	23	100	10600	5400	8600	ADQ	ADQ(H)
EAST BASE ACCESS								
* US 70-ALEXANDER	1.63			(25100)		15300	100	G
ALEXANDER-ROOSEVELT	.55	34	MIL	(25100)	6300	16600	MILITARY	G
FOREST HILL DRIVE								
US 70-WEBB	.33	18	50	8400	500	900	ADQ	ADQ(K)
GREENFIELD BLVD. (SR 1746)								
US 70-SR 1747	1.52	29	60	13200	660	3300	ADQ	ADQ
SR 1747-SR 1745	.38	29	60	13200	2640	6000	ADQ	ADQ
GREENFIELD BLVD. (SR 1745)								
SR 1746-SR 1756	.27	29	60	13200	3030	6500	ADQ	ADQ
GREENFIELD BLVD. EXT.								
* SR 1746-SR 1756	.30			(11000)		2000	100	L
* SR 1756-SR 1735 EXT.	.74			(11000)		3200	100	L
* SR 1735 EXT.-US 70	1.84			(11000)		1300	100	L
MCCOTTER BLVD.								
US 70-NC 101	1.90		80	(11000)		3000	ADQ	L
MILLER BLVD. (SR 1763)								
US 70-BELLTOWN	.05	42	50	(23200)	9710	15900	70	H
BELLTOWN-PARK LANE	.25	24	60	(23200)	8230	13800	70	H
PARK LANE-CHURCH	.47	24	50	(23200)	4800	7850	70	H
NC 101								
US 70-ROOSEVELT	.21	52	100	(31800)	23200	26000	ADQ	C
ROOSEVELT-CUNNINGHAM	.30	44	100	20000	8000	14600	ADQ	ADQ(H)
CUNNINGHAM-WEBB	.30	28	100	(23200)	9000	16000	ADQ	H
WEBB-GEIGER	.49	20	100	(23200)	6300	9500	ADQ	H
GEIGER-SHOP BRANCH CREEK	1.08	20	100	(11000)	3920	9600	ADQ	L
SHOP BRANCH-N. STUDY LIM	1.34	20	100	(11000)	3400	6900	ADQ	L

## APPENDIX C

## TABLE 1 (CONT)

## THOROUGHFARE PLAN STREET TABULATION AND RECOMMENDATIONS

*****								
* *	* *	* EXISTING *			* *	* RECOMMENDED *		
		* X - SECTION			*CAPACITY*	*	* X - SECTION	
* FACILITY & SECTION	*DIST	RDWY	ROW	CURRENT	* 1978	* 2005	* ROW	*RDWAY*
*	* MI	* FT	*FT	*(FUTURE)*	ADTS	ADTS	*(ULT)	*(ULT)*
*****								
PINEVIEW STREET								
US 70-HOLLYWOOD	.43	18	60	8400	450	800	ADQ	ADQ(K)
ROOSEVELT BLVD.								
US 70-NC 101	.34	48	100	25100	8500	12000	ADQ	ADQ
SR 1735 EXTENSION TO SR 1756								
* US 70-BELLTOWN	.52			(13000)		1200	100	J
* BELLTOWN-GREENFIELD EXT	.42			(11000)		3400	100	L
* GREENFIELD EXT.-SR 1756	.67			(11000)		1600	100	L
US 70								
E. STUDY LIM-US 70 8YP	.97	48	260	31000	12000	25600	ADQ	ADQ
US 70 8YP-E. BASE ACCESS	1.91	48	260	31000	11400	19300	ADQ	ADQ
E. BASE ACCESS-GREEFIELD	.61	48	260	28000	11500	14150	ADQ	ADQ
GREENFIELD-CHURCH	1.24	48	260	25100	15000	15500	ADQ	ADQ
CHURCH-CHADWICK	.42	48	260	25100	17500	14300	ADQ	ADQ
CHADWICK-HOLLY	.28	48	260	25100	19850	18750	ADQ	ADQ
HOLLY-MILLER (NC 101)	.42	48	260	25100	20800	20000	ADQ	ADQ
MILLER-CUNNINGHAM	.47	52	260	25100	15150	13500	ADQ	ADQ
CUNNINGHAM-FOREST HILL	.83	68	260	26400	21000	25000	ADQ	ADQ
FOREST HILL-S. CITY LIM	.60	68	100	26400	17000	15000	ADQ	ADQ
S. CITY LI-US 70 BYP	.60	48	100	28000	13880	18900	ADQ	ADQ
US 70 BYP-S. STUDY LIM	.62	48	100	31000	13660	28900	ADQ	ADQ
US 70 8YPASS								
* US 70 EAST-SR 1756	5.56			(32000)		11200	250	A
* SR 1756-US 70 WEST	2.94			(32000)		10000	250	A
WEBB BLVD. (SR 1724)								
NC 101-FOREST HILL	.99	20	60	9400	1650	2000	ADQ	ADQ(K)

\* NEW FACILITY

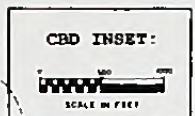
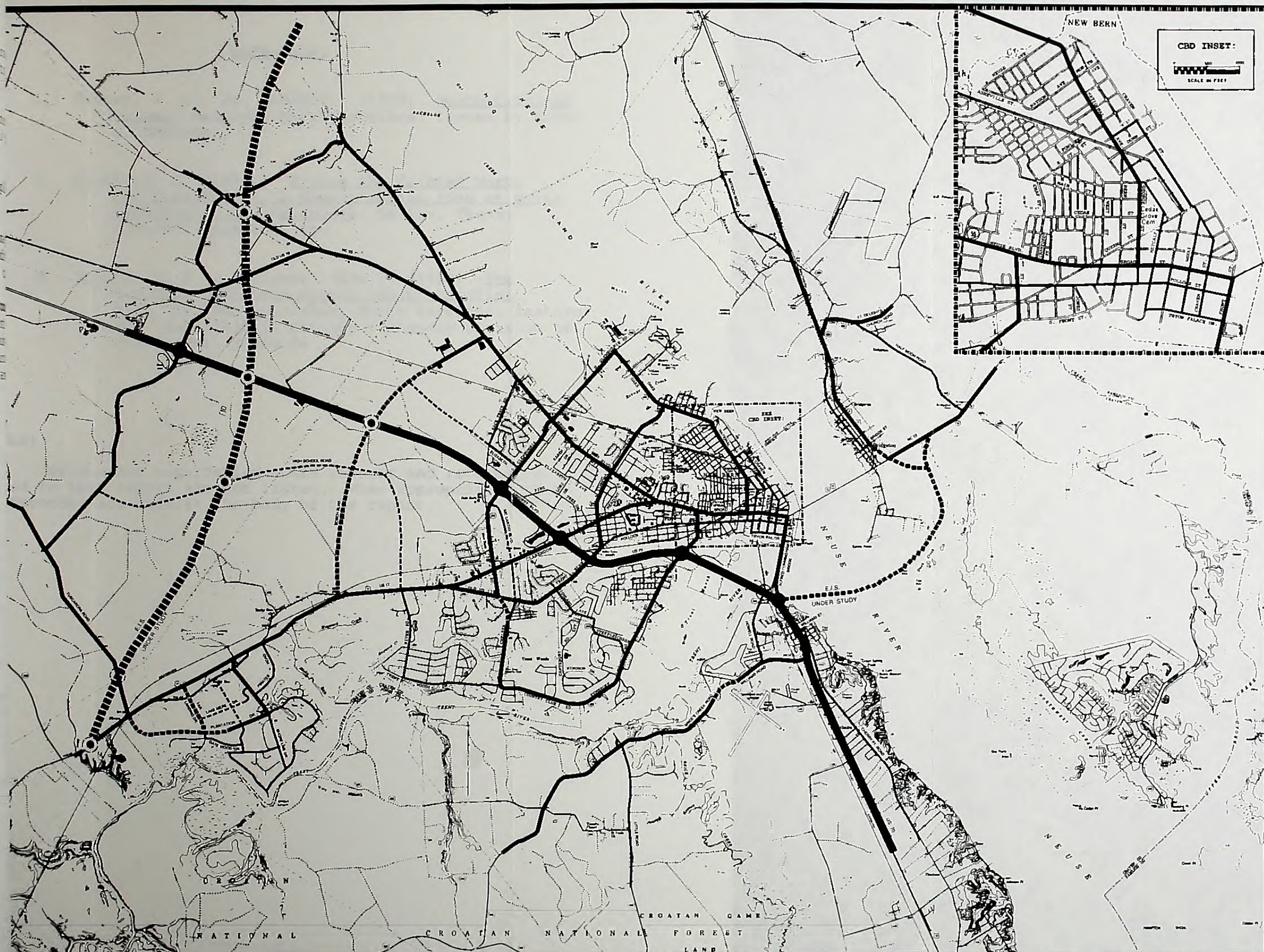
MAJOR RECOMMENDATIONS  
FOR  
NEW BERN-BRIDGETON-TRENT WOODS-RIVER BEND  
THOROUGHFARE PLAN

1. **New John Lawson Bridge** - Replace the present John Lawson Bridge with a multilane high rise bridge. The location shown is one of several alternatives presently being studied by a private consultant who has contracted with NCDOT to complete an environmental impact study for the project. This alternative was used for the thoroughfare planning study because it allowed for a direct connection to the US 70 Bypass and diverted through type traffic away from New Bern's central business and historic districts which are heavily congested. However, this location may not turn out to be the best after all the environmental and traffic concerns are evaluated.
2. **Williams Road/Brice's Creek Road Connector** - This is a high growth residential area that does not have direct connection to US 70. Since the completion of the Williams Road extension from Howell Road to US 70 this last connection will provide the continuity needed to access this developing area of New Bern in an efficient manner.
3. **McCarthy Boulevard/Commerce Drive Connector** - This is a proposed parallel facility to Glenburnie Road that will provide access for future industrial development and relieve congestion on Glenburnie Road.
4. **High School Road** - This is a proposed minor thoroughfare that provides access and will relieve future traffic congestion in a projected high growth area of New Bern.
5. **Bosch Boulevard** - This is a partial loop facility that will aid local traffic flow among NC 43/55, US 70, and US 17. It will also provide access and travel for future development in one of New Bern's projected high growth areas.
6. **US 17 Bypass** - This is a proposed four lane freeway that will allow regional traffic on US 17 to bypass the local municipalities thus relieving congested local corridors and improving local traffic flow.
7. **Clarks Road (SR 1225)/Saunders Lane (SR 1243) Realignment** - These two thoroughfares in conjunction with Ipock Road and Tuscarora Road are used as a local bypass route for US 17 and NC 43. This proposal is designed to alleviate an offset intersection at Old US 70 so traffic can operate more efficiently and safely through that intersection.
8. **Saunders Lane (SR 1243)/Ipock Road (SR 1243)** - The same principle applies here that was discussed in the above project except that it is at the intersection of NC 55.



9. **Plantation Drive Extension** - A proposed major thoroughfare in River Bend that will create an additional access to the Town from US 17 and improve general circulation.
10. **Lake Mere Drive Extension** - This is a proposed minor thoroughfare in River Bend that will improve local circulation and enhance access for future development.
11. **Pine Wood Drive Extension** - The same principle applies here that was discussed for Lake Mere Drive.
12. **Tar Landing Drive Extension** - This is a proposed major thoroughfare in River Bend that will create an additional access to the Town from US 17 and improve general circulation.
13. **Chelsea Road (SR 1200)/Dog Track Road (SR 1309) Connector**  
-Chelsea is one of the primary entrances into Trent Woods. This proposal will allow for a more direct and thus more efficient traffic flow from Trent Woods to Glenburnie Road, which is one of the major loop facilities in the area that connects to all the major radial thoroughfares.





ADOPTED BY:	
BRIDGETON	JUNE 14, 1992
TRENT WOODS	JUNE 9, 1992
RIVER BEND	MAY 16, 1990
NEW BERN	JULY 14, 1992
RECOMMENDED FOR APPROVAL BY:	
NC DEPARTMENT OF TRANSPORTATION	JULY 22, 1992
STATEWIDE PLANNING BRANCH	
ADOPTED BY:	
NC DEPARTMENT OF TRANSPORTATION	AUGUST 14, 1992
PUBLIC HEARING:	
BRIDGETON	
TRENT WOODS	
RIVER BEND	MAY 16, 1990
NEW BERN	JUNE 9, 1992

REVISIONS		
ADOPTED BY	RECOMMENDED BY	NORTH CAROLINA
CITY OF	STATEWIDE PLANNING	BOARD OF
NEW BERN	BRANCH	TRANSPORTATION
JULY 14, 1992	JULY 27, 1992	AUGUST 14, 1992

LEGEND		
ROADWAY CLASSIFICATION	EXISTING	PROPOSED
FREIGHTWAY / EXPRESSWAY		
MAJOR THOROUGHFARE		
MINOR THOROUGHFARE		
INTERCHANGE		
GRADE SEPARATION		

THOROUGHFARE PLAN  
**NEW BERN**  
 RIVER BEND TRENT WOODS BRIDGETON  
 JONES AND CRAVEN COUNTIES  
 NORTH CAROLINA

PREPARED BY THE  
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS PLANNING AND CONSTRUCTION BRANCH  
 IN COOPERATION WITH  
 U.S. DEPARTMENT OF TRANSPORTATION  
 FEDERAL HIGHWAY ADMINISTRATION

SEPTEMBER 9, 1991

JUNE 1, 1992

SCALE IN FEET







## References

1. Cheney, J. L., Jr. (Editor). (1990). North Carolina Manual. Raleigh, North Carolina: Issued by Rufus L. Edmisten.
2. Clements, J. (1988). "Flying the Colors" North Carolina Facts: A comprehensive look at North Carolina county by county. Dallas, Texas: Clements Research, Inc.
3. Howard, B. M. , & Thorne. (Eds.). (1984). The Heritage of Craven County, North Carolina. (vol. I). Winston-Salem, North Carolina: Eastern N.C. Genealogical Society / History Division of Hunter Publishing Co.

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